



**LEAKING UNDERGROUND STORAGE TANK
FINAL ASSESSMENT REPORT COVER SHEET**

NEW or REVISED PER DEQ AUDIT

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY pursuant to Part 213,

Section 324.21311a of the Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. **Check one of the boxes above to indicate whether this is a new or revised submittal.** Please provide the completed Final Assessment Report with the associated Table of Contents, Form EQP4007, within 365-days of discovery of a release to the appropriate RRD District Office.

SITE NAME: Woodward Manchester	FACILITY ID NUMBER: 00041299		
STREET ADDRESS: 91 Manchester			
CITY: Highland Park	ZIP: 48203	COUNTY: Wayne	
DATE(S) RELEASE(S) DISCOVERED: February 4, 2003	CONFIRMED RELEASE NUMBER(S): C-0051-03		
O/O NAME: Woodward Manchester	O/O EMAIL ADDRESS:		
O/O STREET ADDRESS:	CITY:	STATE:	ZIP:
CONTACT PERSON:	PHONE:	FAX:	

Permission is given for the Department of Environmental Quality to contact the Qualified Consultant: YES NO

FINAL ASSESSMENT REPORT INFORMATION: Answer All Questions (DO NOT LEAVE BLANKS)

1. Site Classification (1-4): **4** Previous Site Classification (1-4): **4** Type of RBCA Evaluation: Tier I Tier II Tier III
2. Substance(s) released: Gasoline Diesel Ethanol: E-10 E-85 Other:
3. Has contamination migrated off-site above Tier 1 Residential RBSLs? YES NO
If YES, have off-site impacted parties been notified per Section 21309a(3) of Part 213? YES NO
4. Predominant groundwater flow direction: **N/A** Depth to groundwater: **N/A**
5. Is mobile NAPL present: Currently? YES NO Previously? YES NO
If present, was it recovered? YES NO If recoverable, total gallons recovered since last reported: _____ to date: _____
6. Is migrating NAPL present: YES NO If yes, are actions being taken to stop the NAPL migration? YES NO
7. Since Last Report: cubic yards of soil remediated: **0** gallons of groundwater remediated: **0**
Totals to date: cubic yards of soil remediated: **20** gallons of groundwater remediated: **0**
8. Have toxic or explosive vapors been identified in any confined spaces (basement, sewer, etc.)? YES NO
9. Drinking water supply affected? Currently: YES NO Previously: YES NO
Indicate type and # of wells affected: Private # Public Type II/III # Municipal #
10. Has the release affected surface water or wetlands? YES NO
11. Estimated distance and direction from point of release to nearest: Private well: **>1 Mile radius** Municipal well: **>1 mile radius**
Surface water/wetland: **~1 mile to the NW (Unnamed pond)** Is site within a wellhead protection zone? YES NO
12. Does the report include a request for: In-Situ injection? YES NO DEQ approval for GSI compliance? YES NO
Groundwater not in an aquifer determination? YES NO Institutional controls regarding off-site migration? YES NO
13. What type of corrective action is proposed for each contaminated media? (i.e., Air Sparge/Soil Vapor Extraction; Monitored Natural Attenuation; Multi-phase Extraction; Excavation; Institutional Controls; etc.): **Filing of a Restrictive Covenant.**



MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY – REMEDIATION AND REDEVELOPMENT DIVISION
PO BOX 30426, LANSING, MI 48909-7926, Phone 517-284-5087, Fax 517-241-9581

**LEAKING UNDERGROUND STORAGE TANK
FINAL ASSESSMENT REPORT COVER SHEET**
(Continued)

This Final Assessment Report (FAR), which was completed in accordance with Part 213, Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act, 1994 PA451, as amended, is submitted by:

SIGNATURE OF OWNER/OPERATOR (O/O)

O/O or AUTHORIZED REPRESENTATIVE SIGNATURE	PRINT NAME	DATE

SIGNATURE OF QUALIFIED UST CONSULTANT (QC)

	Mary C. Hoeh	1/23/2015
--	--------------	-----------

QC SIGNATURE*

PRINT NAME

DATE

* By signing this form I certify that I meet the qualified underground storage tank consultant requirements identified in section 324.21325 of Part 213, Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

AKT Peerless	1000 S. Washington, Suite #104, Lansing, MI 48910	
QC COMPANY NAME	QC ADDRESS, CITY, STATE, ZIP	
(517) 482-9227	(517) 568-1334	hoehm@aktpeerless.com
QC PHONE	QC FAX NUMBER	QC Email ADDRESS

Instructions - Utilize the following Table Of Contents (TOC) to ensure that all information required by Part 213, Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 213), is provided in the Final Assessment Report (FAR). RBCA is defined in Part 213 as the ASTM standards E 1739-95 (2010), E 2081-00 (2010), and E 2531-06. Information in these standards must be provided, as applicable per site conditions. The Department of Environmental Quality, Remediation and Redevelopment Division may request supporting documentation to the data and conclusions of the FAR, which may include information identified in the ASTM standards referenced above. Complete the FAR Cover Sheet and pages 1 through 4 of this TOC. The order and format in which the information is provided is at the discretion of the qualified consultant preparing the FAR. Consecutively number each page of the report, including appendices. The TOC column labeled as "Page(s)" should be completed with the range of page numbers for each section. Information previously submitted to the Department may be referenced by specifying where it is located within the referenced document.

FINAL ASSESSMENT REPORT TABLE OF CONTENTS (TOC)		PAGE(s)
A. EXECUTIVE SUMMARY (Optional) Reference: ASTM E1739-95 (2010) 6.11.1		N/A
B. SITE ASSESSMENT and RBCA REPORTING Reference: Part 213, Section 21311a(a) and ASTM E1739-95 (2010), Section 6.2, and Section 6.11.12 thru 6.11.19	<ol style="list-style-type: none"> 1. Exposure point(s) (i.e., location of human and environmental receptors that could be impacted). 2. Locate potential exposure and transport pathways (i.e., ground water transport, vapor migration through soils and utilities, etc.). 3. Current or potential future use of the site and surrounding land, ground water, surface water, and sensitive habitats (as applicable). 4. Regional geological and hydrogeological characteristics (i.e., depth to ground water, aquifer thickness, flow direction, gradient, description of confining units, and ground water quality). 5. An evaluation of impacts to environmental receptors. 6. Records of past releases, potential sources areas, and historical site activities. 7. Identify Chemical(s) of Concern (CoC), location of sources of the CoC, and maximum concentrations of CoC in soil and ground water. 8. Provide a site description and a description of site-specific hydrogeologic conditions. 9. Provide the following maps: <ol style="list-style-type: none"> a. Site location and extended map showing local land use and water supply wells. b. Site plan view showing location of structures (i.e., ASTs, USTs, buried utilities, conduits, suspected and or confirmed sources of contamination, etc.). c. Site photos, if available. d. Ground water elevation. e. Geologic and hydrogeological cross sections. f. Dissolved plume map(s) of the CoC. 	Section 4.0 Section 4.0 Section 4.1 Section 2.2.3 and 2.2.4 Section 4.0 Section 2.2 Sections 2.2 Section 2.3 Figure 2 Figure 3 NA NA Figures 4 - 6 NA
C. TIER I RBSL COMPARISON Reference: ASTM E1739-95 (2010), Section 6.5 thru 6.7	<ol style="list-style-type: none"> 1. Compare Site Conditions and data with Tier I Risk-Based Screening Levels (RBSL). <ol style="list-style-type: none"> a. Discuss all potential exposure scenario(s); primary and secondary sources; transportation mechanisms; exposure pathways; receptors based upon current and anticipated future site use; considering the land use, use restrictions (if any), and the surrounding area and use. b. Discuss exposure scenarios where the CoC is above the RBSL. c. <i>ASTM Exposure Evaluation Flowchart, Figure 2</i>, may be used to characterize site sources and exposure pathways, identify receptors, and compare site conditions with Tier I levels. Identifying all possible corrective action measures and select corrective actions to reduce the concentrations of, or eliminate exposure to the CoC. 	Section 4.0

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D. TIER II EVALUATION		NA
1. If Site-specific Target Levels (SSTLs) are generated, provide all information and an explanation of the calculation of the SSTLs. 2. If relying upon alternative points of compliance, provide the reasoning and information supporting their selection. 3. Gather additional site assessment information to develop or identify corrective action goals, if warranted. 4. Complete a Tier II evaluation on potentially complete exposure pathways. 5. Obtain site-specific hydrogeologic and geologic characteristics to aid in generation of the SSTLs. 6. Define the extent of CoC relative to the RBSL or SSTL, as appropriate. 7. Evaluate the changes in concentrations of CoC over time to determine if they are stable, increasing, and/or decreasing. 8. Determine the CoC measured at the point(s) of exposure (i.e., in drinking water wells, sewers, surface water bodies). 9. Complete mathematical models to generate SSTLs based on the measured and predicted attenuation of the CoC away from the source area(s). 10. Compare the concentrations of the CoC at the point(s) of compliance to the RBSLs or SSTLs to determine if corrective action, interim remedial action or further tier evaluation should be implemented.		
Reference: Part 213, Section 21311a(b) and ASTM E1739-95 (2010), Section. 5.6, Section 6.2, Section 6.7 thru 6.7.3, and Section 6.8 thru 6.83		
E. TIER III EVALUATION		NA
1. Site-specific and surrounding area geological and hydrogeologic characteristics. 2. The extent of CoC relative to the RBSL and/or SSTL. 3. Changes in concentrations of CoC over time (stable, increasing, and decreasing). 4. CoC measured at point(s) of exposure. 5. Models: SSTLs developed using more sophisticated statistical and contaminant fate and transport analyses, using site-specific input parameters for direct and indirect exposure scenarios. 6. Identify the exposure scenarios where the measured concentrations of the CoC are above the SSTL at the point(s) of compliance. 7. Compare the target levels (RBSLs or SSTLs) to the concentrations of the CoC at the point(s) of compliance.		
Reference: Part 213, Section 21311a(b), and ASTM E1739-95 (2010), Section 6.7 thru 6.7.3, and Section 6.9 thru 6.9.2		
F. CONCEPTUAL SITE MODEL(s) (CSM)		Section 3.0
1. CSMs - Provide a written and/or pictorial understanding of the site; conduct exposure pathway evaluations; detail the exposure pathways evaluated; determine if the exposure pathways are incomplete, potentially complete, or complete; and identify possible corrective actions. OR: FOR MOST SITES A Light Nonaqueous Phase Liquid (LNAPL) CSM (LCSM) WILL BE REQUIRED IN PLACE OF A CSM SINCE A PETROLEUM RELEASE IS A LNAPL RELEASE. 2. LCSMs - Describe the occurrence, composition, and physical properties of the LNAPL; as well as the geologic setting(s) where the LNAPL body is located, and is used to determine the risks and potential remedial action; as well as the changes to the LNAPL body and/or footprint. a. LNAPL DISCOVERY: i. Describe how and where the LNAPL was discovered/observed, in which well(s)/boring(s), and provide a site map of the LNAPL. ii. Describe the soil type and product type. If product type is unknown, describe the characteristics and what might be the product type. iii. Describe the known/suspected source of LNAPL and identify on a map.	Section 3.1	

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PAGE(s)

<p>F. CONCEPTUAL SITE MODEL(s) (CSM) – 2.a. LNAPL DISCOVERY continued</p> <ul style="list-style-type: none"> iv. Provide the LNAPL thickness and/or volume and the measured or estimated LNAPL saturation profile, including measurement methods and procedures. v. List obvious nearby receptors, including basements, utilities, water wells, etc. vi. Describe mobile and/or migrating (defined in Part 213) delineation activities completed to date, and provide a site map showing known extent of LNAPL. vii. Delineate and depict, plan view and cross section, of the LNAPL body including the site boundaries, as well as the residual, mobile, and migrating LNAPL, as applicable. <p>b. LNAPL EVALUATION AND RECOVERY:</p> <ul style="list-style-type: none"> i. Describe all LNAPL recovery events (i.e., what and where was done, and duration). ii. Describe in detail the LNAPL recovery methods and procedures utilized, including if groundwater was also recovered and how the recovered LNAPL was differentiated from the recovered groundwater. iii. Complete a table (i.e., Example Table 1 in Appendix A) and discuss event-based and cumulative LNAPL, and groundwater volumes recovered. iv. Provide observations of LNAPL recharge rate(s) for each impacted well. v. If an LNAPL recovery test was performed, complete a table (i.e., Example Tables 2a and 2b in Appendix A) and include applicable figures. Describe the methods, procedures, calculations, results, and conclusions. vi. Describe how recovered LNAPL and groundwater were handled, including the disposal method and location. vii. Describe any and all risks posed by the LNAPL (i.e., expanding plumes, explosion hazards, vapor hazards, contact hazards, etc.). viii. Provide recommendations for future recovery of LNAPL and discuss the rationale for those activities. <p>c. FIGURES:</p> <ul style="list-style-type: none"> i. Attach the following figures in order of discussion in the text. All figures must include a north arrow, scale, and legend. Approximate scales are not acceptable. <ul style="list-style-type: none"> 1. Site Location Map. 2. One or more Site Maps showing (as applicable). <ul style="list-style-type: none"> A. Structures. B. Boring and well locations (including drinking water wells on site). C. Suspected source(s) of LNAPL. D. Locations and depths of on-site buried utilities. E. All past and present petroleum storage tanks, piping, dispensers, and transfer areas. F. Extent of soil excavation. G. Horizontal and vertical extent of LNAPL and state/occurrence of LNAPL ii. Distinguish sequential elements of investigations by dates, symbols, etc. in the legend. iii. LNAPL recovery test graphs showing LNAPL thickness and volume versus time during the recharge phase (i.e., Example Table 2b data). iv. Trend analysis of mobile and/or migrating (as defined in Part 213) LNAPL vs Water Table elevation and select downgradient MWs dissolved contaminants vs. Water Table elevation to determine if the LNAPL is acting as a continuing source of groundwater contamination. Graphical representation is preferred. 	<p>Section 3.1</p>
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Reference: CSMs: ASTM E2081-00(2010), Section 3.2.52; and LCSMs: ASTM 2531-06, Section 3.1.19; and Sections 6 and 7; and Part 213, Section 21307(2), Section 21307(3)(b), Section 21308a.(1)(E)xv through xviii(A – H), Section 21308a(2), Section 21309a(2)(a) and Section 21311a(1)(c)(ii).
See Example Tables in Appendix A

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G. SITE CLASSIFICATION	1. Classify site according to Michigan's site classification system which is based upon the Risk-based Corrective Action (RBCA) process.	Section 5.0
	References: Part 213, Section 21314a; and ASTM E1739-95 (Reapproved 2010), Section 5.4 and Section 6.3	
H. FEASIBILITY ANALYSIS	1. On-site and off-site corrective action alternatives to remediate contaminated soil and groundwater for each cleanup type above the applicable RBSL or applicable SSTL, including alternatives that permanently and significantly reduce the volume, toxicity, and mobility of the regulated substances, if above the applicable RBSL or applicable SSTL. 2. An analysis of the recoverability and whether the NAPL is mobile or migrating. 3. The costs associated with each corrective action alternative, including alternatives that permanently and significantly reduce the volume, toxicity, and mobility of the regulated substances that are above the applicable RBSL or applicable SSTL. 4. The effectiveness and feasibility of each corrective action alternative, in meeting cleanup criteria that are above the applicable RBSL or applicable SSTL. 5. The time necessary to implement and complete each corrective action alternative. 6. The preferred corrective action alternative based upon all of the above. 7. An implementation schedule for completion of the corrective action.	Section 6.0
	Reference: Part 213, Section 21311a(c)	
I. CORRECTIVE ACTION PLAN (CAP)	1. Description of the corrective action to be implemented. 2. Analysis of indicator parameters to be used in evaluating the implementation. 3. Analysis of the recoverability of NAPL and whether NAPL is mobile or migrating. 4. Description of ambient air quality monitoring activities. 5. Operation and maintenance plan. 6. A monitoring plan including: a. Location of monitoring points. b. Environmental media to monitor, including, but not limited to, soil, air, water, biota. c. Monitoring schedule. d. Monitoring methodology, including sample collection and other procedures. e. Substances to be monitored, with explanation of how they will be used. f. Lab methodology, lab name, method detection limits, practical quantitation levels. g. Quality control/quality assurance plan. h. Data presentation and evaluation plan. i. How monitoring data will be used to demonstrate effectiveness of corrective actions. j. Other elements required by the Department to determine the adequacy of the monitoring plan. 7. A schedule for implementation of the corrective action. 8. Financial assurance mechanism.	Section 7.0
	Reference: Part 213, Section 21309a	
J. NOTICE OF CORRECTIVE ACTIONS, INSTITUTIONAL CONTROLS, RESTRICTIVE COVENANTS, ALTERNATIVE MECHANISMS, NOTICE OF LAND & USE RESTRICTIONS	1. An explanation of land and use restrictions, or resource use restrictions, and how they will prevent or control unacceptable exposures. 2. Provide notice to the public directly impacted by the release above a residential RBSL and the proposed corrective action. a. The notice shall include the name, address, and telephone number of a contact person. b. A copy of the notice and proof of providing the notice shall be submitted to the Department.	Section 7.2 and 8.0
	Reference: Part 213, Section 21310a	



PART 213 – FINAL ASSESSMENT REPORT

91 Manchester, Highland Park, Michigan 48203

PREPARED FOR Tetra Tech, Inc.
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Chicago, Illinois 60606

Woodward Avenue Action Association
30947 Woodward Avenue
Royal Oak, Michigan 48073

and

U.S. EPA Region 5
77 West Jackson Blvd
Chicago, Illinois 60604

PROJECT # 3010F-1-20

DATE January 23, 2015

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Figure 4	Cross Section Location Map
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APPENDICES

Appendix A	Boring Logs
Appendix B	Laboratory Analytical Results
Appendix C	Water Well Viewer
Appendix D	LNAPL CSM
Appendix E	VI CSM
Appendix F	RBCA Flow Chart

PART 213 – FINAL ASSESSMENT REPORT

91 Manchester, Highland Park, Michigan

AKT Peerless Project No. 3010F2-1-20

1.0 Introduction

AKT Peerless was retained by Tetra Tech, Inc. (Tetra Tech) to conduct an environmental investigation and prepare a Final Assessment Report (FAR) under Part 213 of the Natural Resources and Environmental Protection Act (NREPA) Public Act (PA) 451 of 1994, as amended (Part 213), for a release from underground storage tank (UST) systems formerly utilized at 91 Manchester Street, Highland Park, Michigan, herein referred to as the subject property. The subject property is located in Section 13 in the City of Highland Park, Wayne County, Michigan (Township 1 South, Range 11 East). Refer to Figure 1 for a Topographic Location Map. The subject property is located on the northeast corner of Woodward Avenue and Sears Street.

2.0 Summary of Corrective Action/Site Characterization

2.1 Site Assessment

2.1.1 Site History Summary

The subject property was historically part of a lumber yard in the early 1900s. Between 1917 and 1971 the subject property was occupied by offices and the executive garage for Ford Motor Company. The subject property building has been unoccupied since 1971. Ford Motor Company sold the property in 1981.

2.2 Corrective Action History

2.2.1 Release History

Review of the Initial Assessment Report (IAR) prepared by CTI & Associates (CTI) revealed underground storage tank (UST) removal activities were conducted in January of 2003. One 5,000-gallon gasoline UST and three 550-gallon USTs with unknown content were removed by Parks Installation and Excavating. A total of 20 cubic yards of soil was noted to have been removed during the UST removal activities. Information regarding the excavation backfill and final disposal site of the soil was not identified in the IAR.

Upon removal of the USTs, 16 soil samples were collected from the sidewalls and bottom of the excavation cavity. The soil samples were submitted for analysis of volatile organic compounds (VOCs), polynuclear aromatic compounds (PNAs), trimethylbenzene isomers (TMBs), polychlorinated biphenyls (PCBs), cadmium, chromium and lead. CTI noted in the IAR that various VOCs and PNAs were detected at concentrations above the respective method detection limits. Although not identified in the IAR, the benzene concentration in ESW-1 exceeds the MDEQ Drinking Water Protection (DWP) criteria.

Cadmium, chromium and lead were identified to exceed the method detection limits in all samples. The IAR identified the lead concentration in soil sample SSW-2 exceeded the MDEQ Direct Contact (DC) criteria. Although not identified in the IAR, the concentrations of chromium in all the soil samples exceeded the MDEQ DWP and the Groundwater Surface Water Interface Protection (GSIP) criteria.

It was reportedly the lead exceedance that prompted CTI to report a release of an unknown substance to the MDEQ on February 4, 2003. The MDEQ issued a confirmed release number C-0051-03.

2.2.2 Immediate Response Action Implementation

The USTs were removed prior to the release confirmation. There was no mention in the IAR regarding piping and dispenser equipment. Based on historical information, it is assumed the historical dispensers were located directly atop the UST basin and, as such, any impact related to piping and dispenser components would be in the same location as the USTs.

2.2.3 Historical Subsurface Investigation and Response Action

In October of 2013 ASTI completed eight soil borings on the subject property (SB-1 through SB-8). Although not all of the soil borings were completed with the intention to evaluate the release from the former USTs, all were analyzed for VOCs, PNAs, cadmium, chromium and lead. Since these parameters are suitable for evaluation of a petroleum release, the sample data from all eight soil borings will be utilized in this report. A total of nine soil samples were collected from the borings. The lithology encountered during the subsurface evaluation consisted of primarily silty or sandy clay to the maximum depth of the soil borings which was 10.5 feet below ground surface (bgs). Groundwater was not encountered during the October 2013 investigation.

Review of the data collected during the October 2013 subsurface investigation revealed detectable concentrations of various VOCs, PNAs, cadmium, chromium and lead. With the exception of chromium, no parameters were identified at concentrations exceeding the current MDEQ Residential Cleanup Criteria (RCC).

2.2.4 AKT Peerless Subsurface Investigation and Response Action

In November of 2014, AKT Peerless completed 14 soil borings on the subject property (HPMT-SB1 through HPMT-SB14). The purpose of the November 2014 soil borings were for due care evaluations regarding the subject property and potential closure of the Leaking Underground Storage Tank (LUST) incident. However, given that the samples were analyzed for PNAs and lead, the sample data from these borings will be utilized in this report.

Review of the November 2014 soil data revealed no PNAs were identified above their method detection limit. Lead was identified in all samples collected during the subsurface investigation, however, only one soil sample (HPMT-BS14 (2')) exhibited a concentration of lead exceeding the MDEQ RCC. The lead concentration at this location exceeds the Residential Direct Contact (DC) criteria.

Soil boring logs from AKT Peerless' November 2014 and available laboratory analytical results from site investigation activities are include in Appendix A and B, respectively.

2.3 Site Characterization

2.3.1 Site Description

2.3.1.1 Site Location and Zoning

The subject property is located in Section 13 in the City of Highland Park, Wayne County, Michigan (Township 1 South, range 11 East). The subject property is located at the northeast corner of Woodward Avenue and Sears Street.

The subject property is currently zoned I2, Special Industrial.

2.3.1.2 Adjacent Properties and Zoning

The subject property is bordered to the north by railroad tracks, to the east by additional industrial property, to the south by a CVS Pharmacy beyond Sears Street and to the west by a retail strip plaza beyond Woodward Avenue.

2.3.1.3 Site Building

The subject property is currently developed with a 54,000 square foot historical office building and garage. The office portion of the structure was constructed sometime between 1917 and 1921, while the garage was built in 1919. The building has been unoccupied since 1971.

2.3.1.4 UST System Information

The following table illustrates all former and existing USTs at the facility and relevant information regarding each USTs status.

Former UST Data

TANK ID NUMBER	CONTENTS		SIZE	HAS THE TANK BEEN EMPTIED?	HAS THE TANK BEEN REMOVED?
	At Time of Release	Previous Contents			
3	Unknown	Unknown	550	Yes	Yes
4	Unknown	Unknown	550	Yes	Yes
A-612011	Gasoline	Gasoline	5,000	Yes	Yes
A-62135	Unknown	Unknown	550	Yes	Yes

There are no UST systems currently located at the subject property.

2.3.2 Site Utilities

The following table summarizes the underground utilities at the subject property.

Utility Type	Location
Storm Sewer Main	Storm sewers were identified along the eastern right-of-way of Woodward Avenue. Catch basins were not identified on the subject property. The storm sewers are connected to the City of Detroit sewer system.
Sanitary Sewer Main	Sanitary sewers were not readily identified on the subject property or the adjacent right of ways. Sanitary sewers are connected to the City of Detroit sewer system which combines sanitary and storm sewer discharges for treatment.
Water Main	Water lines were identified to run within the eastern portion of Woodward Avenue, approximately 2 feet off of the curb line. The connection to the subject property building was not identified.
Natural Gas	The subject property is serviced with natural gas provided by DTE Energy/MichCon. A high pressure gas main was identified within the northbound lanes of Woodward. The connection to the subject property building was not identified.
Electric	Underground electrical lines were identified within the eastern right-of-way of Woodward Avenue. A connection to the subject property building appears to be via the eastern adjoining building.
Telecommunications	Based on the length of time the subject property building has been vacant, the location of telecommunication lines was not available.

2.3.3 Soil Conditions

2.3.3.1 Regional Soil Conditions

According to the USGS' Topographic Map of the Highland Park, Michigan Quadrangle, the subject property is situated at approximately 636 feet above mean sea level. The subject property's topography is flat.

According to the Michigan Geological Survey Division's publication, Quaternary Geology of Southern Michigan (1982), soils in the area are urban land. According to the Natural Resource Conservation Service (NRCS) Web Soil Map, the subject property is not mapped for soils data.

2.3.3.2 Site Soil Conditions

Soil conditions encountered during subsurface investigations completed at the subject property consist of sand fill to approximately 0.5 to 2 feet below grade underlain by clay-based soils to the depth extent of the investigations (10.5 feet bgs).

2.3.4 Groundwater Conditions

2.3.4.1 Regional Groundwater Conditions

Review of the MDEQ Wellviewer database indicated no potable groundwater wells are located within a one-mile radius of the subject property.

2.3.4.2 Site Groundwater Conditions

Groundwater was not encountered during the subsurface investigations completed at the site.

2.4 Modeling Justification/Methodology

No analytical or numerical modeling of contaminant fate and transport has been conducted to evaluate soil and groundwater conditions or natural attenuation.

2.5 Extent of Impact

2.5.1 Soil

One release has been confirmed at the subject property based on lead concentrations in verification samples collected during the UST removal activities. It should be noted that cadmium, chromium, as well as, various PNA and VOC parameters were also identified above their method detection limits in the UST removal verification samples. All were below the MDEQ RCC except benzene was identified in one soil sample at a concentration exceeding the MDEQ DWP criteria while chromium was identified in several samples above the MDEQ GSIP criteria.

Subsequent investigations have been completed at the site in October of 2013 and November of 2014. Review of soil data collected during these investigations revealed no PNAs or VOCs were identified at concentrations exceeding the MDEQ RCC. Chromium and lead were identified in several samples at concentrations exceeding the MDEQ DWP and/or GSIP criteria. The majority of the lead exceedances were identified to be below the published State background levels. Analytical results of soil sample analyses are summarized on Table 1 in comparison to the MDEQ RCC.

Refer to the maps in Figures 3 through 6 for details.

2.5.2 Groundwater

Groundwater was not encountered during the subsurface investigations completed at the subject property.

2.5.3 Soil Gas

Review of the soil data collected from the subject property during various subsurface investigations revealed no parameters in soil samples were identified to exceed the MDEQ Volatilization to Indoor Air Inhalation (VIAI) criteria. Refer to Section 3.2 of this report for additional information regarding vapor intrusion evaluations.

2.5.4 Light Non-Aqueous Phase Liquid (LNAPL) Evaluation

Based on the historical and most recent site investigations conducted at the subject property, recoverable LNAPL is not currently, nor has been historically, present on the site. Review of all available soil data collected during the subsurface investigations at the site did not reveal any impact at concentrations exceeding the MDEQ soil saturation (C_{sat}) screening levels. In addition, based on the lack of impact identified in soil borings near the UST basin, any potential residual LNAPL on-site is not considered mobile.

3.0 Conceptual Site Models

3.1 LNAPL

3.1.1 Mobile/Migrating LNAPL

Mobile LNAPL has never been identified in any soil boring completed on the subject property. Review of soil data collected from both the UST excavation cavity and the surrounding area in comparison to the MDEQ RCC provided supporting evidence that no mobile or migrating LNAPL is present on the subject property, and any potential remaining LNAPL is present in the residual phase, bound up in the soil matrix. Given the lack of groundwater identified during the subsurface investigations, leaching is not occurring at the subject property.

3.1.2 Residual LNAPL

Residual LNAPL at the site is likely very limited in extent. At no time during historical or recent site investigation activities did any soil samples exhibit concentrations exceeding the MDEQ C_{sat} levels for soils remaining on-site.

3.1.3 LNAPL CSM Summary

Based on current site conditions, it is unlikely there is any significant LNAPL remaining at the site. A summary of the LNAPL Conceptual Site Model (CSM) is included in Appendix E.

3.2 Vapor Intrusion

AKT Peerless evaluated the site for the vapor intrusion pathway in accordance with: the ASTM RBCA guidance document; the Michigan rules and regulations under Part 213 of P.A. 451; the MDEQ Remediation and Redevelopment Division (RRD) May 2013 Guidance Document for the Vapor Intrusion Pathway (VI guidance); and the U.S. EPS Office of Underground Storage Tanks (OUST) guidance.

A Step 1 evaluation was conducted based on the May 2013 VI guidance, which includes an evaluation of the applicability of the MDEQ RRD Part 213 RBSLs; evaluation of the need for emergency response and/or assessment; and an evaluation of the release history and current and historical corrective actions performed at the site, including review of site specific laboratory data (i.e., air, soil and groundwater data) to determine if:

1. A human receptor is present that may be impacted;
2. Source soils and/or groundwater are potential sources of vapors; and
3. A vapor route/transport mechanism between the source and potential receptors is present.

3.2.1 Evaluation of Applicability of Vapor Intrusion Screening Levels

The MDEQ Part 213 RBSLs for Soil and Groundwater Volatilization to Indoor Air Inhalation (SVIIC and GVIIC) are based on application of the Johnson and Ettinger Model (1991) (J&E Model). A number of assumptions used in the J&E Model are not applicable for all sites, and it is therefore important as a first step to evaluate whether the J&E Model is the appropriate tool for assessing the vapor intrusion risk when actual site conditions deviate from the assumptions used in the model. To ensure the consideration of critical J&E Model assumptions, Rule 714(2) and 724(2) of the Part 201 Administrative Rules specifically identified conditions when the applicability of the vapor intrusion RBSLs is not appropriate. These conditions include:

- A structure is present or planned to be constructed at the facility which does not have a concrete block or poured concrete floor and walls (not applicable at this site).
- The highest water table evaluation of a contaminated saturated zone at the site, considering seasonal variation, is within three meters (10 feet) of the ground surface (not applicable at this site).
- There is a sump present that is not completely isolated from the surrounding soil by its materials of construction, or there is other direct entry of contaminated groundwater into the basement (not applicable at this site).
- The actual or suspected presence of residual or free-phase light and dense non-aqueous phase liquids (NAPL) (i.e. fuels, solvents,, etc.) or smear zones in the subsurface (not applicable at this site).

The USEPA has also identified a number of conditions under which the application of the J&E Model is precluded because these conditions can result in concentrations that may not be protective of the public health for the VI pathway.

- The presence of heterogeneous geologic materials between the vapor source and the building (not applicable at this site).
- The presence of geologic materials that are fractured, contain macropores, karst, or other preferential pathways (not applicable at this site).
- Sites where significant lateral flow of vapors can occur due to preferential pathways (not applicable at this site).
- Shallow groundwater in contact with the building foundation (not applicable at this site).
- Small building air exchange rates (e.g. less than 0.25 building exchanges/hour) (not likely applicable at this site).
- Buildings with crawlspace structures or other significant openings to the subsurface (e.g. earthen floors, stone buildings, etc.) (not applicable at this site).
- Contaminated groundwater sites with large water table fluctuations (not applicable at this site).

Given the above evaluation, the J&E model does apply to the subject property. As such, volatilization to indoor air inhalation evaluations will be based on the MDEQ Soil Volatilization to Indoor Air Inhalation (VIAI) criteria. A summary of the VI CSM is included in Appendix E.

3.2.2 Evaluation of the Need for Emergency Response or Assessment

Emergency response or assessment activities are not appropriate, as the remaining adsorbed unleaded gasoline (ULG) concentrations are well below the acute inhalation, flammability and explosivity screening levels, as well as the available MDEQ VIAI criteria.

3.2.3 Vapor Intrusion Screening and Receptor Survey

3.2.3.1 Human Receptor Evaluation

Potential human receptors for the future development of the subject property include employees and the general public.

3.2.3.2 Vapor Source Evaluation

Review of soil data collected during various subsurface investigations completed at the site did not revealed any parameters which exceed the MDEQ VIAI criteria. As such, no vapor source has been identified.

3.2.3.3 Receptor Evaluation

The nearest structure identified as potential VI receptor is the approximate 54,000 square foot building which includes areas historically used as office space and as garage space. Both portions of the building include a poured concrete slab with no basement structures.

3.2.3.4 Migration Routes

Underground encumbrances identified during the site assessment were limited to site utilities. Given the lack of impact above the MDEQ VIAI criteria, vapor migration is determined to be an incomplete pathway.

3.2.4 Vapor Intrusion CSM Evaluation Summary

Based on the VI pathway evaluation, the only potential VI receptor would be the on-site building. Given the lack of impact above the MDEQ VIAI criteria, it was determined that VI is not a risk to the on-site building.

4.0 Risk Based Corrective Action (RCBA) Tier I Evaluation

AKT Peerless has performed a Tier I RBCA evaluation as outlined in the ASTM RBCA standard (ASTM E-2081-00), utilizing the information gathered during the various phases of investigation and corrective actions completed at the site. The evaluation consisted of two phases: first, identification of applicable exposure pathways for on-site and off-site receptors; and second, comparison of the maximum concentrations of on-site and off-site impact for soil and groundwater to the MDEQ RCC for the identified applicable exposure pathways. Refer to the table in the attachments for soil comparison table and Appendix E for the RBCA Flow Chart.

4.1 Receptor Evaluation

Site features, including soil lithology, underground encumbrances, ground covers, on-site building and other site structures, and groundwater characteristics were evaluated to identify potential receptors and preferential pathways, as presented in the following.

4.1.1 Site Structures

The only structure on the subject property is the 54,000 square foot building which consists of approximately 45,000 square feet of office space and approximately 9,000 square feet of garage space. The building is current vacant and has been vacant since at least 1971. The buildings have a slab on grade construction with no basement structures.

4.1.2 Building Employees

The subject property building is not currently occupied. However, for comprehensive evaluation purposes, the subject property building will be evaluated as having the potential to accommodate employees.

4.1.3 Adjacent Properties

A railroad and commercial properties are located north of the site, an industrial building formerly associated with the subject property is located immediately east of the site, a CVS pharmacy is located south of the site beyond Sears Road and a retail plaza is located west of the site beyond Woodward Avenue. The commercial and industrial properties will be evaluated as potential receptors.

4.1.4 Potable Wells

There are no water supply wells in the vicinity of the site, and the site and surrounding properties are connected to the municipal water supply. The MDEQ Wellviewer map indicated no potable wells are located within a one-mile radius of the subject property. Refer to Appendix B for Wellviewer information.

4.1.5 Utility Corridors/Surface Waters

The nearest surface water body was identified to be an unnamed pond located approximately 1 mile northwest of the subject property. Soil sample analytical results indicate exceedances of MDEQ GSIP criteria. No groundwater was identified during the multiple subsurface investigations completed at the site. On-site catch basins were not identified on-site nor were storm sewer utility lines. The subject property is serviced with sanitary and storm sewers via the City of Detroit sewer system. All discharge to both storm and sanitary sewers in this system are combined and are treated prior to any discharge to surface waters. As such, surface waters are not considered a potential receptor.

4.2 Pathway Evaluation

The pathway evaluation consisted of a comparison of the maximum soil petroleum hydrocarbon concentrations with the lowest MDEQ RCC as established in Operational Memorandum 31, December 10, 2004, updated September 2012; and the MDEQ RRD May 2013 VI guidance.

4.2.1 Soil Ingestion/Absorption

No remaining soil samples collected on the site have exceeded the MDEQ direct contact (DC) or particulate soil inhalation criteria with the exception of lead. Lead was identified at SSW-2 (6') at a concentration exceeding both the MDEQ Residential and Non-Residential DC criteria. In addition, lead was identified at HPMT-SB14 (2') at a concentration exceeding only the MDEQ Residential DC criteria. As such, the pathway is considered complete.

4.2.2 Inhalation

As discussed in Section 3.2 of this report, the MDEQ VIAI criteria is applicable for the subject property. Review of the soil data from the multiple subsurface investigations completed at the subject property no impact has been identified to exceed the MDEQ VIAI criteria. As such, the inhalation pathway is not considered complete.

4.2.3 Potable Water Use

The subject property is serviced with municipal water. In addition, no groundwater was identified during the multiple subsurface investigations completed at the subject property. As such, the drinking water pathway is not considered complete.

4.2.4 Recreational Use/Sensitive Habitat

The nearest surface water body to the subject property was identified to be an unnamed pond located approximately 1 mile to the northwest of the subject property. Based on the size and location of the pond, it is not considered to be likely used for recreation. No wetland, parks or other recreational property were identified to adjoin the subject property. As such, there is a negligible potential for adverse impact to sensitive habitat or resources (e.g. sport fish, economically important species, threatened or endangered species, wetlands, etc.). The release did not include any bio-accumulative compounds, nor result in adverse impact to surface vegetation or wildlife.

A RBCA flow chart that was completed based on the findings of AKT Peerless' site investigation is presented in Appendix E.

4.3 Optional Tier II or Tier III Evaluation

A site-specific Tier II or Tier III evaluation was not conducted for this site.

5.0 Site Classification

Using the MDEQ Operational Memorandum No. 3 guidance, the site is currently classified as a Class 4 site, based on the known concentrations of chemicals of concern (COCs) in soil at the site.

6.0 Feasibility Analysis

Potential alternatives for corrective action at the site were reviewed and considered. These alternatives were compared and evaluated using the following set of criteria:

- The effectiveness in removing the contaminants;
- The environmental impacts affected by dissolved phase hydrocarbons;
- The technical feasibility, implementability and cost-effectiveness of the remedial options; and
- Maintenance of regulatory compliance.

The following corrective action alternatives were considered:

6.1 Monitoring Natural Attenuation and Performance Monitoring

Monitored natural attenuation (MNA), also known as passive bioremediation, intrinsic bioremediation, or intrinsic remediation, is a passive remedial approach that depends on natural processes to degrade

and dissipate petroleum constituents in soil and groundwater. Some of the processes involved in natural attenuation of petroleum products include aerobic and anaerobic biodegradation, dispersion, volatilization, and adsorption. In general, for petroleum hydrocarbons, biodegradation is the most important natural attenuation mechanism, as it is the primary process that results in a reduction of constituent mass.

MNA of both adsorbed and dissolved phase hydrocarbon concentrations provides a low cost alternative and minimal disruption to site activities. Due to the limited impact at the site, MNA is not considered a feasible remedial option.

6.2 Institutional Controls

A Restrictive Covenant (RC) reportedly exists for the property that restricts the site to non-residential use. However, a copy of such documentation could not be obtained. If such documentation cannot be obtained, an RC is planned to be filed with Wayne County restricting the site to non-residential use. In addition, surface cover requirements noted in the RC will eliminate the pathway which exists in the limited area where the lead impact exceeds the MDEQ Non-Residential DC criteria. The implementation of this RC will eliminate all existing exposure pathways.

6.3 Vacuum Enhanced Recovery

Vacuum enhanced groundwater extraction/total phase extraction (VEGE/TPE) systems extract free product (if present), water and soil vapor simultaneously. A VEGE system involves groundwater extraction via submersible pumps (pneumatic or electric) combined with the application of a continuous vacuum to extract soil vapors from the pore space of the soil matrix (SVE). In addition to actively recovering free product (if present) and impacted groundwater, groundwater extraction lowers the water table, exposing impacted soils beneath the water table to the SVE process. Low vacuum VEGE systems are most effective in high yielding, high transmissivity formations and mid-range vacuum VEGE systems are most effective in medium yielding, medium transmissivity formations.

A TPE system utilizes oil or water sealed liquid ring pumps or positive displacement blowers to extract groundwater, free product (if present), and soil vapors form the subsurface simultaneously through drop tubes installed in extraction wells. Typical TPE systems are capable of vacuum levels approaching 30-inches of mercury and are most effective in low yield, low transmissivity formations.

The advantages to these technologies are that they are proactive and can address COCs located under buildings or other site improvements. The disadvantage to these technologies are concentration reductions greater than 90% are difficult to achieve, air emissions from the remedial system may require permits, and groundwater treatment or disposal options may have high cost.

The impact at the subject property consists primarily of chromium and lead metals. VEGE/TPE systems are not designed to remediate metals impact. As such, VEGE/TPE is not considered a viable remediation option at this time.

7.0 Corrective Action Plan

The Corrective Action Plan (CAP) and closure strategy prepared for the site incorporates the use of an RC limiting the site use to non-residential purposes, as well as, the maintenance of surface cover above areas of MDEQ DC RCC exceedances.

7.1 Description of Corrective Action

7.1.1 Institutional Controls

Upon MDEQ approval of this FAR, an RC will be submitted to Wayne County(if documentation of an existing RC cannot be obtained) restricting the subject property to non-residential use and requiring continues surface cover in the area of lead impact above the MDEQ DC criteria.

7.2 Schedule of Implementation of the Corrective Action

An RC as discussed previously will be filed (if documentation of an existing RC cannot be obtained) within one year of administrative approval of the FAR by the MDEQ. A Closure Report will then be prepared and submitted to the MDEQ.

7.3 Financial Assurance Mechanism

The CAP will be implemented by the owner/operator which will self-fund the activities.

8.0 Notices and Restrictions

As described in section 7.1.3, an RC will be filed for the subject property upon administrative approval of the FAR by the MDEQ. A copy of the RC will be provided in a Closure Report.

9.0 Signatures of Environmental Professionals



Mary C. Hoeh, CHMM
Senior Project Manager
AKT Peerless Environmental Services
Mid & West, Michigan Region
Phone: 517-482-9227
Fax: 517-568-1334



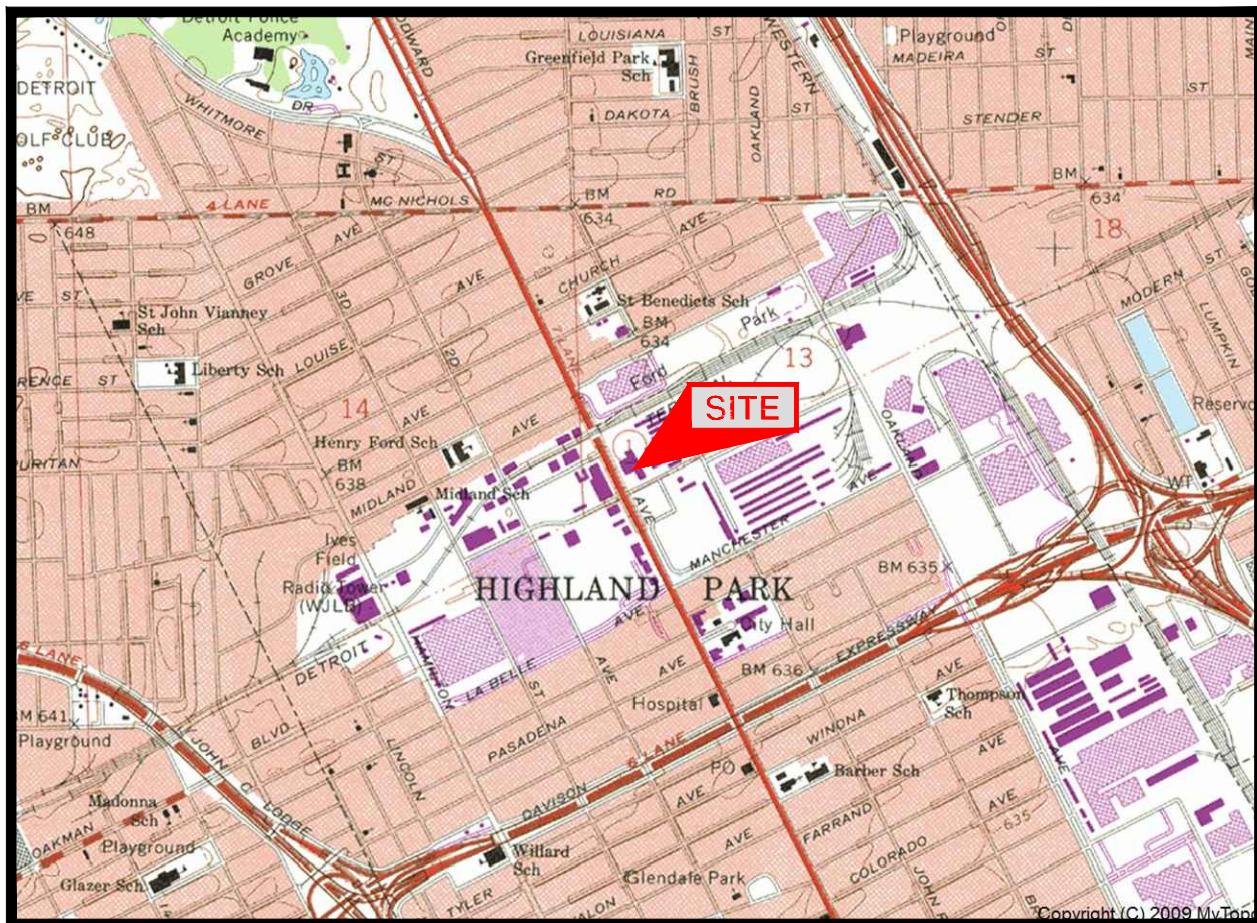
Brett A. Shoaff
Group Leader
AKT Peerless Environmental Services
Southeast Michigan Region
Phone: 248-615-1333
Fax: 248-615-1334

FIGURES

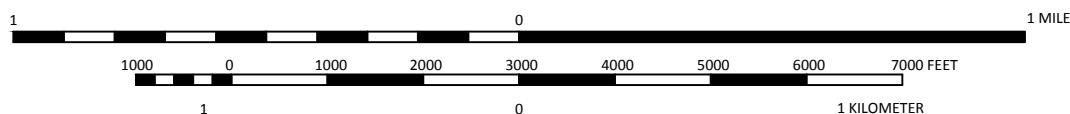
HIGHLAND PARK QUADRANGLE

MICHIGAN - WAYNE COUNTY

7.5 MINUTE SERIES (TOPOGRAPHIC)



T.1 S.-R.11 E.



MICHIGAN
QUADRANGLE LOCATION



IMAGE TAKEN FROM 1968 U.S.G.S. TOPOGRAPHIC MAP
PHOTOREVISED 1983

AKT PEERLESS

ILLINOIS

MICHIGAN

OHIO

GEORGIA

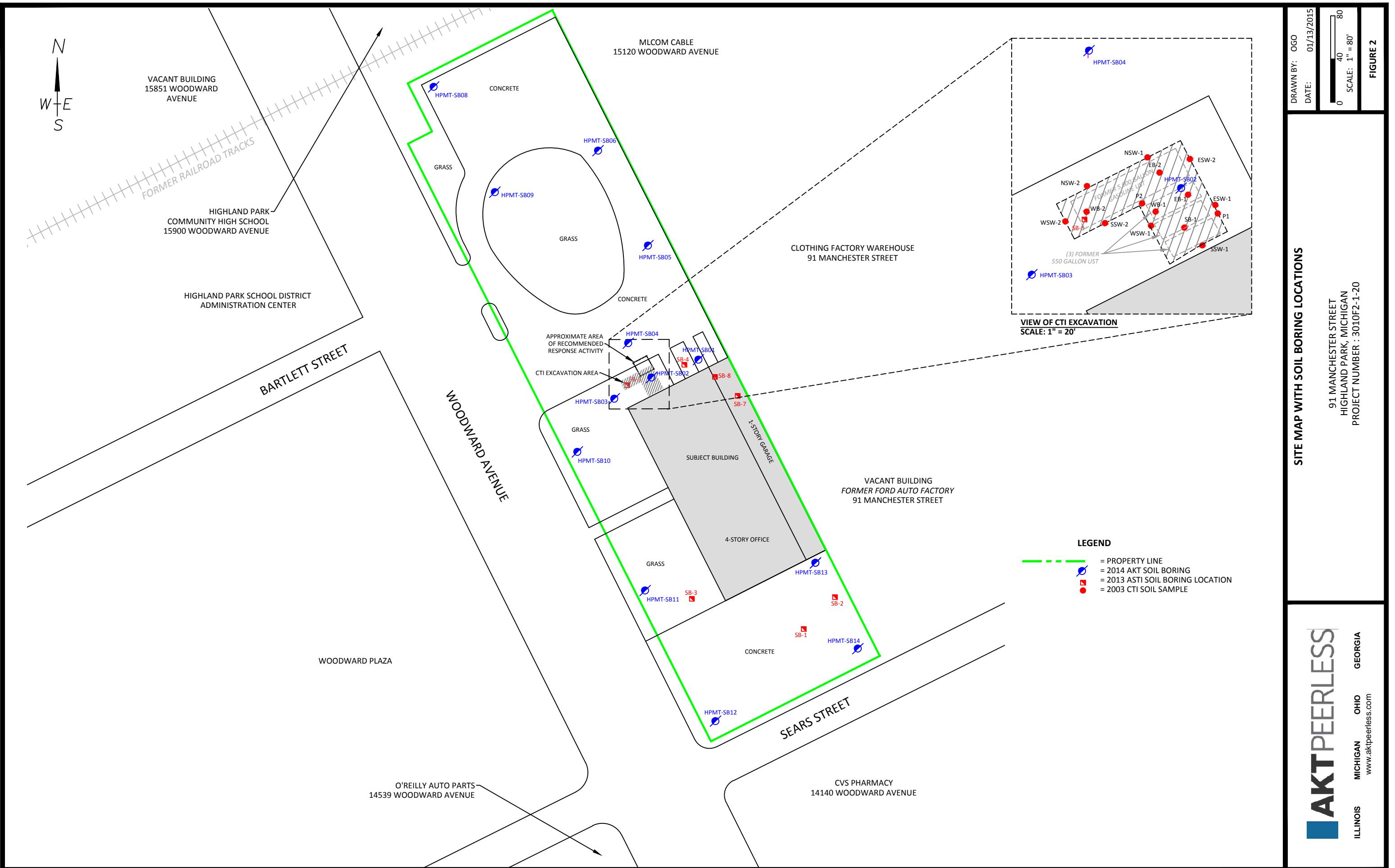
www.aktpeerless.com

TOPOGRAPHIC LOCATION MAP

91 MANCHESTER STREET
HIGHLAND PARK, MICHIGAN
PROJECT NUMBER : 3010F2-1-20

DRAWN BY: DDB
DATE: 12/12/2014

FIGURE 1



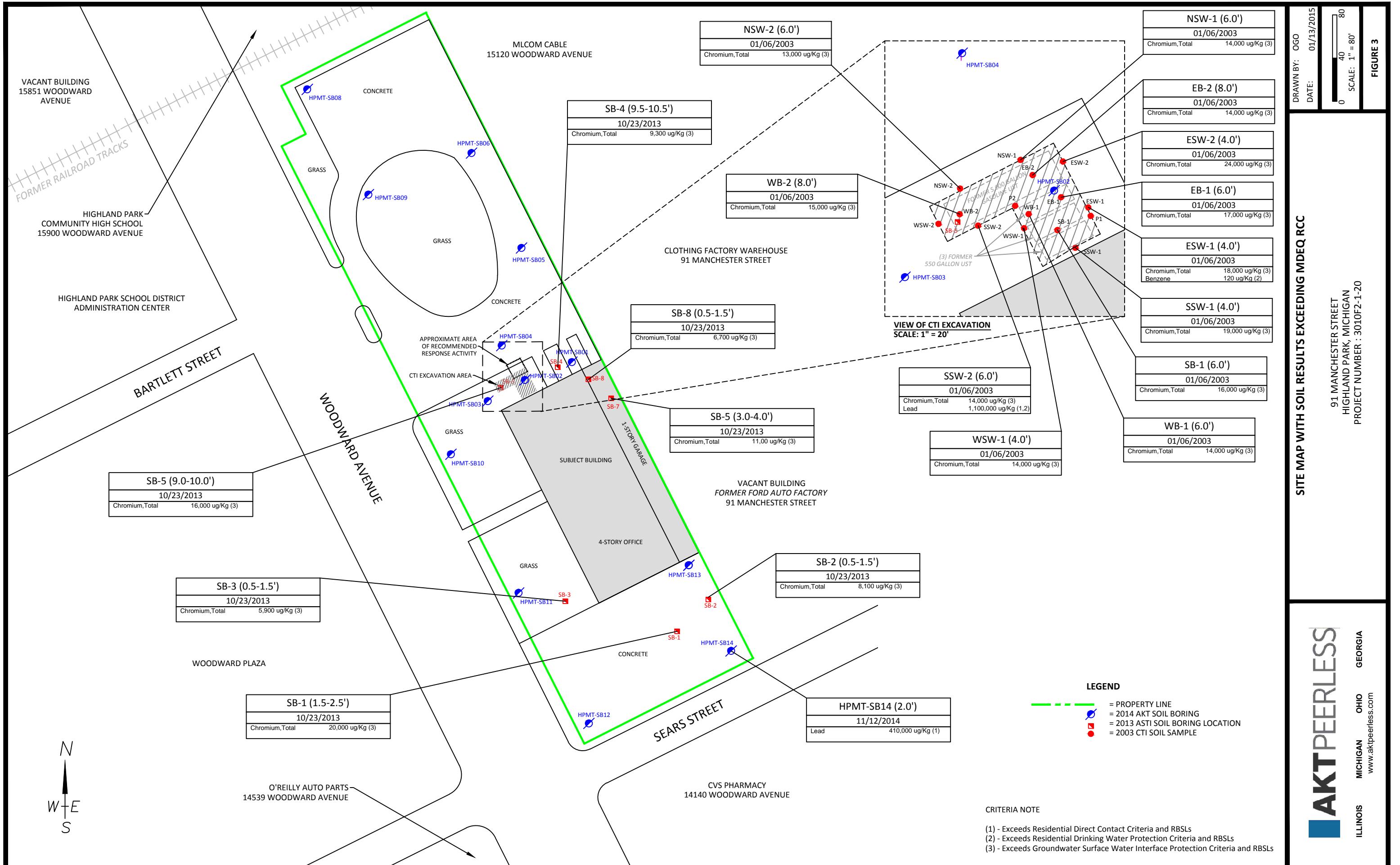
91 MANCHESTER STREET
HIGHLAND PARK, MICHIGAN
PROJECT NUMBER : 3010F2-1-20

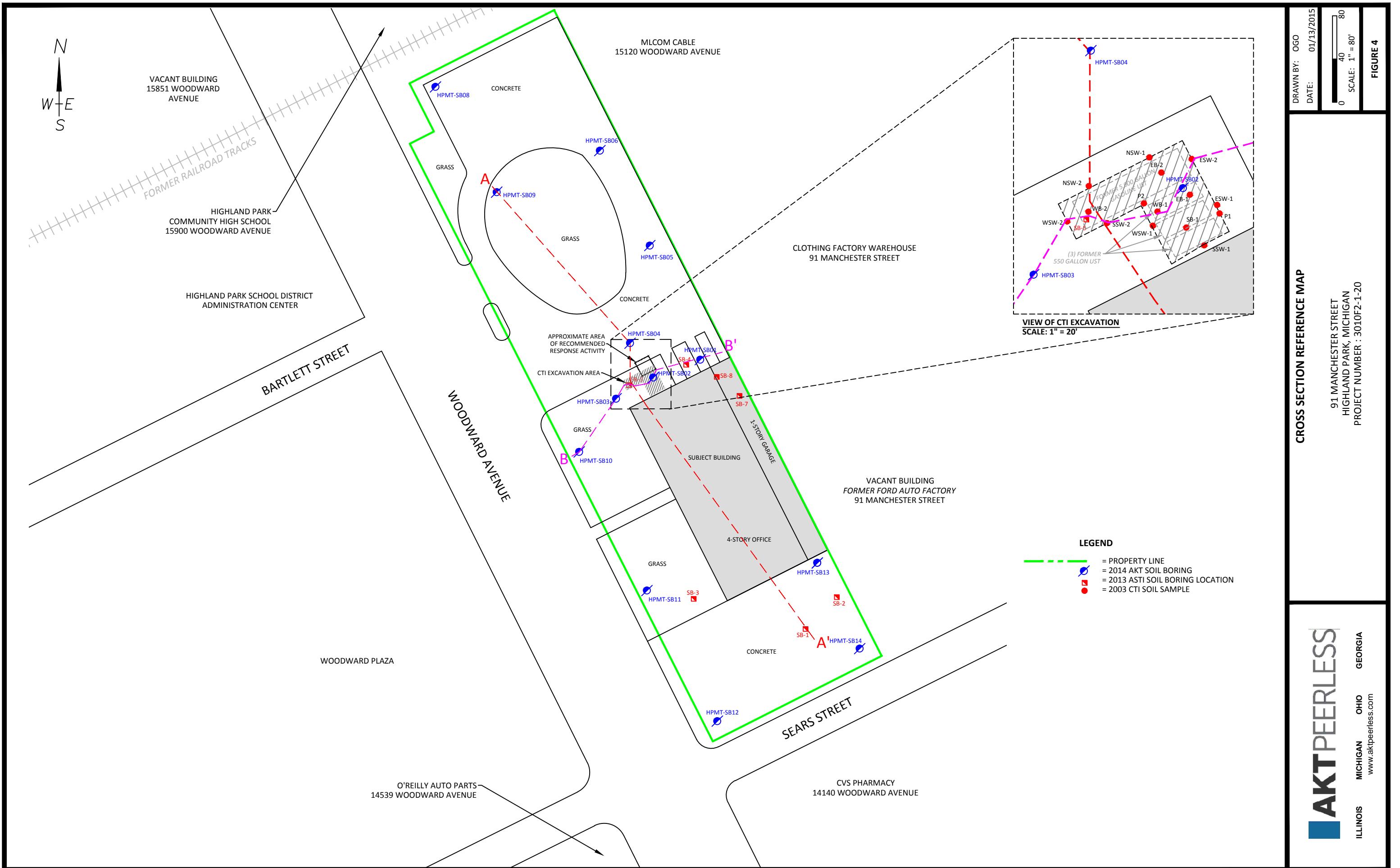
DRAWN BY: OGO
DATE: 01/13/2015
SCALE: 1" = 80'

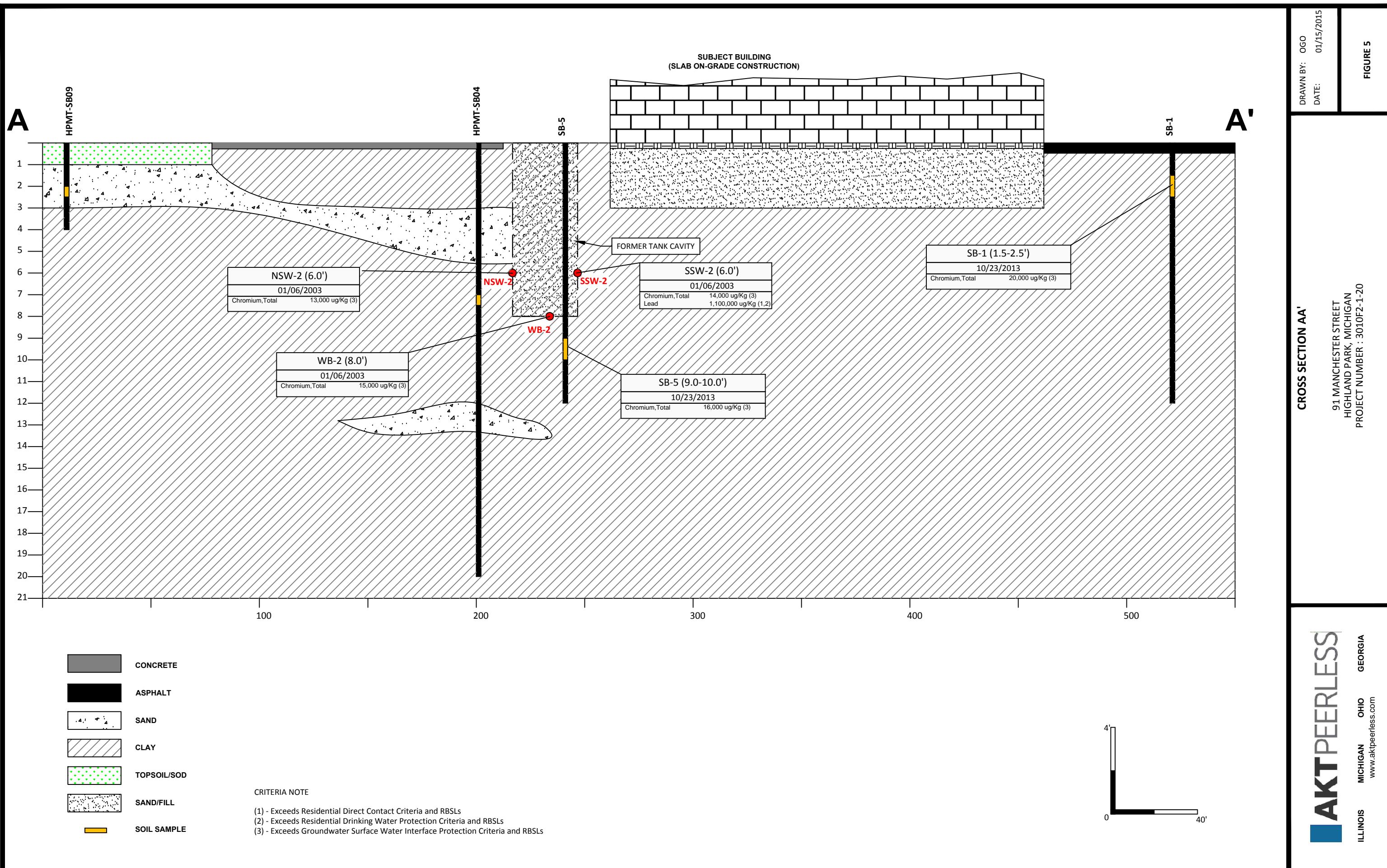
FIGURE 3

AKTPEERLESS
ILLINOIS
OHIO
GEORGIA
MICHIGAN
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SITE MAP WITH SOIL RESULTS EXCEEDING MDEQ RCC

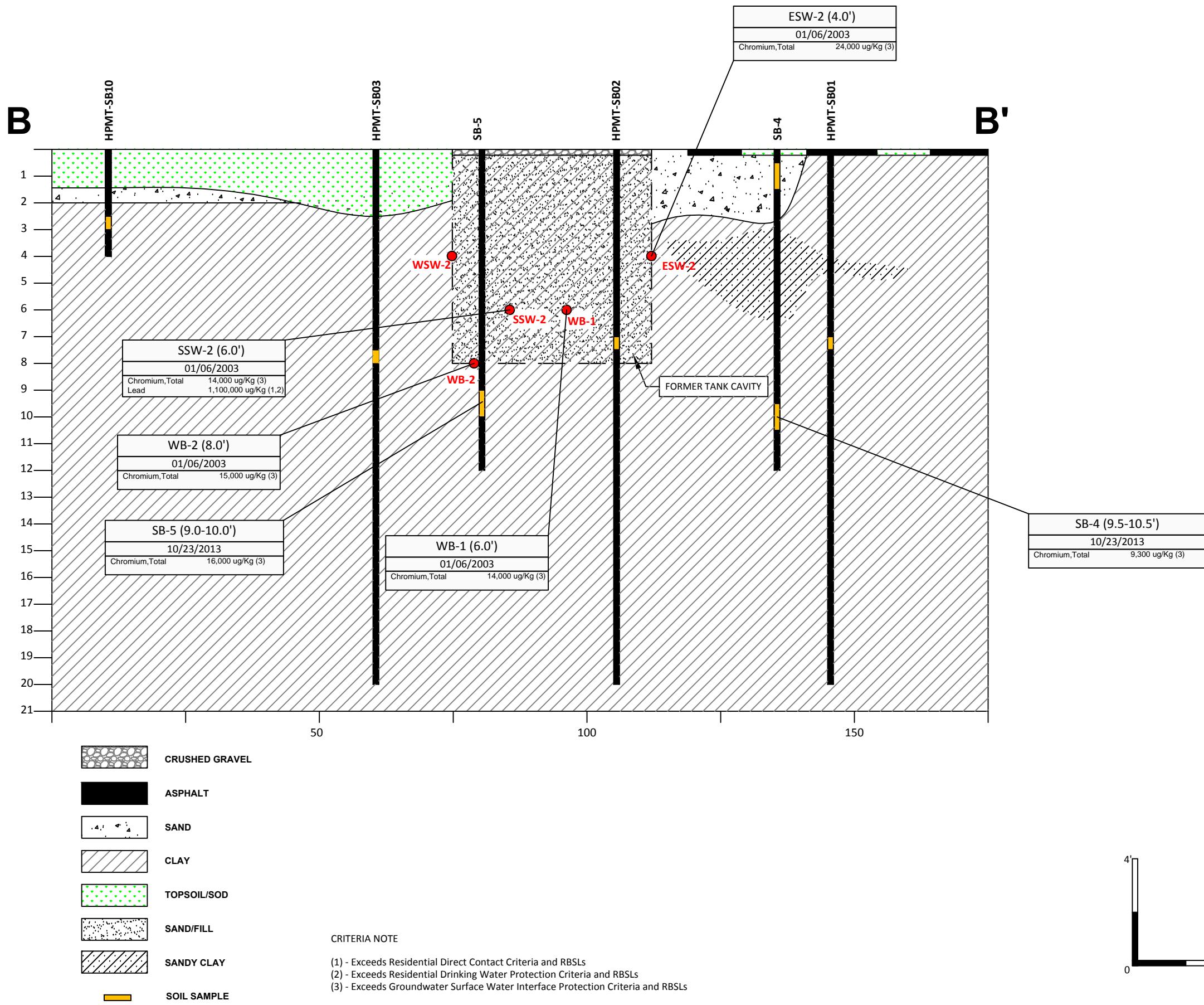






DRAWN BY: OGO
DATE: 01/15/2015

CROSS SECTION BB'
91 MANCHESTER STREET
HIGHLAND PARK, MICHIGAN
PROJECT NUMBER : 3010F2-1-20



TABLES

Table 1
Summary of Soil Analytical Results
PART 213 FINAL ASSESSMENT REPORT
Highland Park, Michigan
AKT Peerless Project No. 3010f-1-20

Guidesheet Number →	#10	#11	#12	#13	#18	#20	#20														
Parameters*	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria and RBSLs	Groundwater Surface Water Interface Protection Criteria and RBSLs	Residential Soil Volatilization to Indoor Air Inhalation Criteria and RBSLs	Residential Direct Contact Criteria and RBSLs	Residential Soil Saturation Concentration Screening Levels	Soil Saturation Concentration Screening Levels	Maximum Concentration Detected	Sample Location	HPMT-SB01(7)111214	HPMT-SB02(7)111214	HPMT-SB03(7.5')111214	HPMT-SB04(7)111214	HPMT-SB05(2)111214	HPMT-SB09(2')111214	HPMT-SB10(2.5')111214	HPMT-SB13(2')111214	SB-1	SB-2	SB-3
										Collection Date	11/12/2014	11/12/2014	11/12/2014	11/12/2014	11/12/2014	11/12/2014	11/12/2014	10/23/2013	10/23/2013	10/23/2013	
*(Refer to detailed laboratory report for method reference data)										Depth (feet bgs)	7'	7'	7.5'	7'	7'	2'	2.5'	2'	1.5-2.5'	0.5-1.5'	0.5-1.5'
Metals ug/Kg																					
Cadmium (B)	7440-43-9	1,200	6,000	(G,X)	NLV	5.5E+5	NA	NA	5,600		NA	NA	NA	NA	NA	NA	NA	NA	290	<200	<200
Chromium, Total	7440-47-3	18,000 (total)	30,000	3,300	NLV	2.5E+6	NA	NA	24,000		NA	NA	NA	NA	NA	NA	NA	NA	20,000	8,100	5,900
Lead (B)	7439-92-1	21,000	7.0E+5	(G,X)	NLV	4.0E+5	NA	NA	1,100,000		6,600	29,000	7,500	7,400	5,900	3,700	2,500	8,700	42,000	10,000	21,000
Semivolatiles, ug/Kg																					
Acenaphthene	83-32-9	NA	3.0E+5	8,700	1.9E+8	4.1E+7	NA	NA	720		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Anthracene	120-12-7	NA	41,000	ID	1.0E+9 (D)	2.3E+8	NA	NA	1,200		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)anthracene (Q)	56-55-3	NA	NLL	NLL	NLV	20,000	NA	NA	2,100		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)pyrene (Q)	50-32-8	NA	NLL	NLL	NLV	2,000	NA	NA	1,800		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(b)fluoranthene (Q)	205-99-2	NA	NLL	NLL	ID	20,000	NA	NA	2,300		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(g,h,i)perylene	191-24-2	NA	NLL	NLL	NLV	2.5E+6	NA	NA	920		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(k)fluoranthene (Q)	207-08-9	NA	NLL	NLL	NLV	2.0E+5	NA	NA	850		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Chrysene (Q)	218-01-9	NA	NLL	NLL	ID	2.0E+6	NA	NA	1,800		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Dibenzo(a,h)anthracene (Q)	53-70-3	NA	NLL	NLL	NLV	2,000	NA	NA	370		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluoranthene	206-44-0	NA	7.3E+5	5,500	1.0E+9 (D)	4.6E+7	NA	NA	4,800		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	490
Fluorene	86-73-7	NA	3.9E+5	5,300	5.8E+8	2.7E+7	NA	NA	330		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Indeno(1,2,3-cd)pyrene (Q)	193-39-5	NA	NLL	NLL	NLV	20,000	NA	NA	1,100		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Phenanthrene	85-01-8	NA	56,000	2,100	2.8E+6	1.6E+6	NA	NA	3,900		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pyrene	129-00-0	NA	4.8E+5	ID	1.0E+9 (D)	2.9E+7	NA	NA	4,000		<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Volatiles, VOCs ug/Kg																					
2-Methylnaphthalene	91-57-6	NA	57,000	4,200	2.7E+6	8.1E+6	NA	NA	460		NA	NA	NA	NA	NA	NA	NA	NA	<330	<330	<330
Benzene (I)	71-43-2	NA	100	4,000 (X)	1,600	1.8E+5	4.0E+5	4.0E+5	120		NA	NA	NA	NA	NA	NA	NA	NA	<50	<55	<50
Naphthalene	91-20-3	NA	35,000	730	2.5E+5	1.6E+7	NA	NA	580		NA	NA	NA	NA	NA	NA	NA	NA	<330	<330	<30
Toluene (I)	108-88-3	NA	16,000	5,400	3.3E+5 (C)	5.0E+7 (C)	2.5E+5	2.5E+5	160		NA	NA	NA	NA	NA	NA	NA	NA	<100	<100	<100
Xylenes (I)	1330-20-7	NA	5,600	820	6.3E+6 (C)	4.1E+8 (C)	1.5E+5	1.5E+5	310		NA	NA	NA	NA	NA	NA	NA	NA	<150	<170	<150

Table 1
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Highland Park, Michigan
AKT Peerless Project No. 3010f-1-20

Guidesheet Number →	#10	#11	#12	#13	#18	#20	#20																
Parameters*	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria and RBSLs	Groundwater Surface Water Interface Protection Criteria and RBSLs	Residential Soil Volatilization to Indoor Air Inhalation Criteria and RBSLs	Residential Direct Contact Criteria and RBSLs	Soil Saturation Concentration Screening Levels	Maximum Concentration Detected	Sample Location	SB-4	SB-4	SB-5	SB-6	SB-7	SB-8	EB-1	WB-1	EB-2	WB-2	SB-1	NSW-1		
									Collection Date	10/23/2013	10/23/2013	10/23/2013	10/23/2013	10/23/2013	10/23/2013	1/6/2003	1/6/2003	1/6/2003	1/6/2003	1/6/2003	1/6/2003		
*(Refer to detailed laboratory report for method reference data)									Depth (feet bgs)	0.5-1.5'	9.5-10.5'	9-10'	1.5-2.5'	3-4'	0.5-1.5'	6'	6'	8'	8'	6'	6'		
Metals ug/Kg																							
Cadmium (B)	7440-43-9	1,200	6,000	(G,X)	NLV	5.5E+5	NA	NA	5,600		NA	<200	750	<200	210	<200	1,000	1,300	710	690	850	800	
Chromium, Total	7440-47-3	18,000 (total)	30,000	3,300	NLV	2.5E+6	NA	NA	24,000		NA	9,300	16,000	20,000	11,000	6,700	17,000	14,000	14,000	14,000	15,000	16,000	
Lead (B)	7439-92-1	21,000	7.0E+5	(G,X)	NLV	4.0E+5	NA	NA	1,100,000		NA	19,000	100,000	9,300	42,000	24,000	23,000	18,000	18,000	7,400	6,300	9,000	8,200
Semivolatiles, ug/Kg																							
Acenaphthene	83-32-9	NA	3.0E+5	8,700	1.9E+8	4.1E+7	NA	NA	720		<330	<330	<330	<330	<330	<330	ND	ND	ND	ND	ND	ND	
Anthracene	120-12-7	NA	41,000	ID	1.0E+9 (D)	2.3E+8	NA	NA	1,200		<300	<300	<300	1,200	<300	<330	ND	ND	ND	ND	ND	ND	
Benzo(a)anthracene (Q)	56-55-3	NA	NLL	NLL	NLV	20,000	NA	NA	2,100		<330	<330	<330	2,100	<330	<330	ND	ND	ND	ND	ND	ND	
Benzo(a)pyrene (Q)	50-32-8	NA	NLL	NLL	NLV	2,000	NA	NA	1,800		<330	<330	<330	1,800	<330	<330	ND	ND	ND	ND	ND	ND	
Benzo(b)fluoranthene (Q)	205-99-2	NA	NLL	NLL	ID	20,000	NA	NA	2,300		<330	<330	<330	2,300	<330	<330	ND	ND	ND	ND	ND	ND	
Benzo(g,h,i)perylene	191-24-2	NA	NLL	NLL	NLV	2.5E+6	NA	NA	920		<330	<330	<330	920	<330	<330	ND	ND	ND	ND	ND	ND	
Benzo(k)fluoranthene (Q)	207-08-9	NA	NLL	NLL	NLV	2.0E+5	NA	NA	850		<330	<330	<330	850	<330	<330	ND	ND	ND	ND	ND	ND	
Chrysene (Q)	218-01-9	NA	NLL	NLL	ID	2.0E+6	NA	NA	1,800		<330	<330	<330	1,800	<330	<330	ND	ND	ND	ND	ND	ND	
Dibenzo(a,h)anthracene (Q)	53-70-3	NA	NLL	NLL	NLV	2,000	NA	NA	370		<330	<330	<330	370	<330	<330	ND	ND	ND	ND	ND	ND	
Fluoranthene	206-44-0	NA	7.3E+5	5,500	1.0E+9 (D)	4.6E+7	NA	NA	4,800		<330	<330	<330	4,800	<330	<330	ND	ND	ND	ND	ND	ND	
Fluorene	86-73-7	NA	3.9E+5	5,300	5.8E+8	2.7E+7	NA	NA	330		<330	<330	<330	330	<330	<330	ND	ND	ND	ND	ND	ND	
Indeno(1,2,3-cd)pyrene (Q)	193-39-5	NA	NLL	NLL	NLV	20,000	NA	NA	1,100		<330	<330	<330	1,100	<330	<330	ND	ND	ND	ND	ND	ND	
Phenanthrene	85-01-8	NA	56,000	2,100	2.8E+6	1.6E+6	NA	NA	3,900		<330	<330	<330	3,900	<330	<330	ND	ND	ND	ND	ND	ND	
Pyrene	129-00-0	NA	4.8E+5	ID	1.0E+9 (D)	2.9E+7	NA	NA	4,000		<330	<330	<330	4,000	<330	<330	ND	ND	ND	ND	ND	ND	
Volatiles, VOCs ug/Kg																							
2-Methylnaphthalene	91-57-6	NA	57,000	4,200	2.7E+6	8.1E+6	NA	NA	460		<330	<330	<330	460	<330	<330	ND	ND	ND	ND	ND	ND	
Benzene (I)	71-43-2	NA	100	4,000 (X)	1,600	1.8E+5	4.0E+5	4.0E+5	120		NA	100	<50	<93	<60	<62	72	ND	ND	ND	ND	ND	
Naphthalene	91-20-3	NA	35,000	730	2.5E+5	1.6E+7	NA	NA	580		<330	<330	<330	330	<330	<330	ND	ND	ND	ND	ND	ND	
Toluene (I)	108-88-3	NA	16,000	5,400	3.3E+5 (C)	5.0E+7 (C)	2.5E+5	2.5E+5	160		NA	<100	<100	<100	<100	<100	ND	ND	ND	ND	ND	ND	
Xylenes (I)	1330-20-7	NA	5,600	820	6.3E+6 (C)	4.1E+8 (C)	1.5E+5	1.5E+5	310		NA	<150	<150	<280	<180	<190	160	ND	ND	ND	ND	ND	

Table 1
Summary of Soil Analytical Results
PART 213 FINAL ASSESSMENT REPORT
Highland Park, Michigan
AKT Peerless Project No. 3010f-1-20

Guidesheet Number →	#10	#11	#12	#13	#18	#20	#20									
Parameters*	Chemical Abstract Service Number	Statewide Default Background Levels	Residential Drinking Water Protection Criteria and RBSLs	Groundwater Surface Water Interface Protection Criteria & RBSLs	Residential Soil Volatilization to Indoor Air Inhalation Criteria and RBSLs	Residential Direct Contact Criteria and RBSLs	Residential Soil Saturation Concentration Screening Levels	Soil Saturation Concentration Screening Levels	Maximum Concentration Detected	Sample Location	NSW-2	SSW-1	SSW-2	ESW-1	ESW-2	WSW-1
										Collection Date	1/6/2003	1/6/2003	1/6/2003	1/6/2003	1/6/2003	1/6/2003
										Depth (feet bgs)	6'	4'	6'	4'	4'	4'
Metals ug/Kg																
Cadmium (B)	7440-43-9	1,200	6,000	(G,X)	NLV	5.5E+5	NA	NA	5,600		890	940	980	5,600	1,500	1,600
Chromium, Total	7440-47-3	18,000 (total)	30,000	3,300	NLV	2.5E+6	NA	NA	24,000		13,000	19,000	14,000	18,000	24,000	14,000
Lead (B)	7439-92-1	21,000	7.0E+5	(G,X)	NLV	4.0E+5	NA	NA	1,100,000		8,200	54,000	1,100,000	320,000	260,000	7,900
Semivolatiles, ug/Kg																
Acenaphthene	83-32-9	NA	3.0E+5	8,700	1.9E+8	4.1E+7	NA	NA	720		ND	ND	ND	ND	ND	ND
Anthracene	120-12-7	NA	41,000	ID	1.0E+9 (D)	2.3E+8	NA	NA	1,200		ND	ND	ND	ND	ND	ND
Benzo(a)anthracene (Q)	56-55-3	NA	NLL	NLL	NLV	20,000	NA	NA	2,100		ND	ND	ND	ND	ND	ND
Benzo(a)pyrene (Q)	50-32-8	NA	NLL	NLL	NLV	2,000	NA	NA	1,800		ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene (Q)	205-99-2	NA	NLL	NLL	ID	20,000	NA	NA	2,300		ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	191-24-2	NA	NLL	NLL	NLV	2.5E+6	NA	NA	920		ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene (Q)	207-08-9	NA	NLL	NLL	NLV	2.0E+5	NA	NA	850		ND	ND	ND	ND	ND	ND
Chrysene (Q)	218-01-9	NA	NLL	NLL	ID	2.0E+6	NA	NA	1,800		ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene (Q)	53-70-3	NA	NLL	NLL	NLV	2,000	NA	NA	370		ND	ND	ND	ND	ND	ND
Fluoranthene	206-44-0	NA	7.3E+5	5,500	1.0E+9 (D)	4.6E+7	NA	NA	4,800		ND	ND	ND	ND	490	ND
Fluorene	86-73-7	NA	3.9E+5	5,300	5.8E+8	2.7E+7	NA	NA	330		ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene (Q)	193-39-5	NA	NLL	NLL	NLV	20,000	NA	NA	1,100		ND	ND	ND	ND	ND	ND
Phenanthrene	85-01-8	NA	56,000	2,100	2.8E+6	1.6E+6	NA	NA	3,900		ND	ND	610	ND	ND	ND
Pyrene	129-00-0	NA	4.8E+5	ID	1.0E+9 (D)	2.9E+7	NA	NA	4,000		ND	ND	ND	ND	410	ND
Volatiles, VOCs ug/Kg																
2-Methylnaphthalene	91-57-6	NA	57,000	4,200	2.7E+6	8.1E+6	NA	NA	460		ND	ND	390	ND	ND	ND
Benzene (I)	71-43-2	NA	100	4,000 (X)	1,600	1.8E+5	4.0E+5	4.0E+5	120		62	ND	52	120	ND	62
Naphthalene	91-20-3	NA	35,000	730	2.5E+5	1.6E+7	NA	NA	580		ND	ND	580	ND	ND	ND
Toluene (I)	108-88-3	NA	16,000	5,400	3.3E+5 (C)	5.0E+7 (C)	2.5E+5	2.5E+5	160		ND	ND	85	150	160	150
Xylenes (I)	1330-20-7	NA	5,600	820	6.3E+6 (C)	4.1E+8 (C)	1.5E+5	1.5E+5	310		150	ND	85	220	310	ND

Appendix A

Boring Logs

AKT PEERLESS

BORING LOG
14534 Woodward Avenue
Highland Park, MI
AKT Peerless Project No: 3010f2-1-20

HPMT-SB-01

Drawn By: MRB
Date: 12/4/2014

DRILLING COMPANY:				AKT Peerless			WEATHER:	Cloudy, 33 F
TECHNICIAN:				B. Fox			BORING DEPTH:	20 FEET BGS
DATE DRILLED:				11/12/14			DEPTH TO GW:	Not Encountered
DRILLING METHOD:				Geoprobe			SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:				B. Shoaff			SCREEN MATERIAL:	Not Applicable
DEPTH FEET	SAMPLE INTERVAL	% RECOVERY	PID VALUE	USCS SOIL CLASS.	COLOR	GEOLOGIC DESCRIPTION	MOISTURE	TEMPORARY WELL DIAGRAM
2		100	<0.1	CL	D. Brown	ASPHALT WITH GRAVEL (4 INCHES) CLAY: sandy with trace pebbles	M	
4		100	<0.1	CL	Brown	SAND: very fine grained, some clay, soft CLAY: sandy with pebbles, soft	M	
6		100	<0.1	CL	Brown	 CLAY: silty, mottled, pebbles, very hard	D	
8								
10		95	<0.1					
12								
14		100	<0.1	CL	Gray	 CLAY: silty to sandy, some gravel, very hard, no mottling	D	
16								
18		100	<0.1	CL	Gray	 CLAY: silty to sandy, some gravel, softer	D	
20						End of Boring		

AKT PEERLESS

BORING LOG
14534 Woodward Avenue
Highland Park, MI
AKT Peerless Project No: 3010f2-1-20

HPMT-SB-02Drawn By: MRB
Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 33 F
TECHNICIAN:	B. Fox	BORING DEPTH:	20 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable

DEPTH FEET	SAMPLE INTERVAL	% RECOVERY	PID VALUE	USCS SOIL CLASS.	COLOR	GEOLOGIC DESCRIPTION		MOISTURE	TEMPORARY WELL DIAGRAM
						CRUSHED GRAVEL (4 INCHES)			
2		100	<0.1	CL	Gray/Brown	CLAY: sandy with pebbles (fill), gray/brown mottled		M	
4		100	<0.1						
6		100	<0.1			CLAY: silty to sandy, some gravel, mottled, very hard slight petroleum odor		M	
8									
10		100	<0.1			CLAY: silty to sandy with gravel, very hard		D	
12									
14		100	<0.1						
16									
18		100	<0.1						
20						End of Boring			

AKT PEERLESS

BORING LOG
14534 Woodward Avenue
Highland Park, MI
AKT Peerless Project No: 3010f2-1-20

HPMT-SB-03

Drawn By: MRB
Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 33 F
TECHNICIAN:	B. Fox	BORING DEPTH:	20 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable

DEPTH FEET	SAMPLE INTERVAL	% RECOVERY	PID VALUE	USCS SOIL CLASS.	COLOR	GEOLOGIC DESCRIPTION		MOISTURE	TEMPORARY WELL DIAGRAM
2		100	<0.1	D. Brown to Black	GRASS	TOP SOIL: sandy		D	
4		100	<0.1	CL	Brown	CLAY: sandy with pebbles		M	
6		100	<0.1	CL	Gray/Brown	CLAY: sandy with pebbles, mottled		M	
8		100	<0.1	Gray/Brown	Gray/Brown	CLAY: sandy with pebbles, mottled, soft CLAY: silty to sandy, with pebbles, crumbly, mottled		W D	
10		100	<0.1	CL	Gray/Brown	CLAY: silty to sand, with pebbles, crumbly, mottled, hard		D	
12		100	<0.1	CL	Gray	CLAY: hard		M	
14		100	<0.1						
16		100	<0.1						
18		100	<0.1						
20						End of Boring			

AKTPEERLESS

BORING LOG
14534 Woodward Avenue
Highland Park, MI
AKT Peerless Project No: 3010f2-1-20

HPMT-SB-04

Drawn By: MRB
Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 33 F
TECHNICIAN:	B. Fox	BORING DEPTH:	20 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable

DEPTH FEET	SAMPLE INTERVAL	% RECOVERY	PID VALUE	USCS SOIL CLASS.	COLOR	GEOLOGIC DESCRIPTION		MOISTURE	TEMPORARY WELL DIAGRAM
2		100	<0.1	CL	Brown	CONCRETE (2 TO 3 INCHES) CLAY: sandy with pebbles, mottled		D	
4		100	<0.1	SM	Brown	SAND: fine grained, loose		D	
6		100	<0.1	CL	Brown	CLAY: sandy to silty, mottled, pebbles, hard		D	
8		100	<0.1	CL	Gray	CLAY: silty to sandy, pebbles, hard		D	
10		100	<0.1	SM	D. Brown	SAND: fine grained, lose		W	
12		100	<0.1	CL	Gray	CLAY: silty with pebbles, hard		D	
14		100	<0.1						
16		100	<0.1						
18		100	<0.1						
20						End of Boring			



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-05

Drawn By: MRB

Date: 12/4/2014



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-06

Drawn By: MRB

Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 33 F
TECHNICIAN:	B. Fox	BORING DEPTH:	4 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-08

Drawn By: MRB

Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 33 F
TECHNICIAN:	B. Fox	BORING DEPTH:	4 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable

DEPTH FEET	SAMPLE INTERVAL	% RECOVERY	PID VALUE	USCS SOIL CLASS.	COLOR	GEOLOGIC DESCRIPTION		MOISTURE	TEMPORARY WELL DIAGRAM
2		100	<0.1	SM	Orange to L. Brown	ASPHALT (3 INCHES)	CRUSHED GRAVEL & SAND		D
4						SAND (fill): fine grained			
6									
8									
10									
12									
14									
16									
18									
20									
						End of Boring			



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-10

Drawn By: MRB

Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 35 F
TECHNICIAN:	B. Fox	BORING DEPTH:	4 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-11

Drawn By: MRB

Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 35 F
TECHNICIAN:	B. Fox	BORING DEPTH:	4 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-12

Drawn By: MRB

Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 35 F
TECHNICIAN:	B. Fox	BORING DEPTH:	4 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-13

Drawn By: MRB

Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 35 F
TECHNICIAN:	B. Fox	BORING DEPTH:	4 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable



BORING LOG

14534 Woodward Avenue

Highland Park, MI

AKT Peerless Project No: 3010f2-1-20

HPMT-SB-14

Drawn By: MRB

Date: 12/4/2014

DRILLING COMPANY:	AKT Peerless	WEATHER:	Cloudy, 35 F
TECHNICIAN:	B. Fox	BORING DEPTH:	4 FEET BGS
DATE DRILLED:	11/12/14	DEPTH TO GW:	Not Encountered
DRILLING METHOD:	Geoprobe	SCREEN INTERVAL:	Not Applicable
FIELD GEOLOGIST:	B. Shoaff	SCREEN MATERIAL:	Not Applicable

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-1
Total Depth:	12'

Site Address:	14534 Woodward Avenue Highland Park, MI
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Date Completed:	10/23/2013
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Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	4"	Asphalt	0	
4"	1.5'	Clay with sand and gravel, grey, soft	0	
1.5'	5.5'	Clay with silt, blue/grey & brown mottling, soft	0.1	Soil @ 1.5-2.5'
5.5'	7.5'	Clay with silt and trace stone, blue/grey & brown mottling, medium stiff	0	
7.5'	9.0'	Clay with sand, silt, and trace stone, stiff, brown, damp	0.1	
9.0'	12.0'	Clay with silt and trace stone, brown, stiff	0	
		End of Boring		

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-2
Total Depth:	12'

Site Address:	14534 Woodward Avenue Highland Park, MI
---------------	--

Date Completed:	10/23/2013
-----------------	------------

Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	0.5'	Sand, silt, and clay, black, moist	0	
0.5'	1.5'	Silty sand with crushed stone, black	9	Soil @ 0.5-1.5'
1.5'	4.0'	Clay with silt, blue/grey & brown mottling, soft	0.1	
4.0'	7.0'	Clay with silt and trace stone, brown and grey mottling, soft	0.1	
7.0'	12.0'	Clay with silt, brown, stiff	0	
		End of Boring		

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-3
Total Depth:	12'

Site Address:	14534 Woodward Avenue Highland Park, MI
---------------	--

Date Completed:	10/23/2013
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Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	0.5'	Sand, silt, clay, black, moist	0	
0.5	3.5'	Clay with silt and sand, dark brown/black, medium stiff, low plasticity	0	Soil @ 0.5-1.5'
3.5'	4.5'	Fine to medium grained sand with silt, black	0	
4.5'	9.0'	Clay with sand, silt, and trace stone, brown, medium stiff	0	
9.0'	10.0'	Clay with sand, silt, and stone, brown, stiff	0	
10.0'	12.0'	Clay with sand, silt, and trace stone, brown, stiff	0	
		End of Boring		

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-4
Total Depth:	12'

Site Address:	14534 Woodward Avenue Highland Park, MI
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Date Completed:	10/23/2013
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Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	2"	Clay, silt, sand, black, soft	0	
2"	2.5'	Fine to coarse sand with clay, silt, crushed stone, brown	0	Soil @ 0.5-1.5'
2.5'	3.0'	Crushed stone	0	
3.0'	6.5'	Sandy clay with silt, black, soft, low plasticity, small piece of brick @ 5'	0	
6.5'	8.0'	Clay with some sand and silt, soft, black	0	
8.0'	9.5'	Clay with silt, brown, soft	0	
9.5'	10.0'	Clay with silt and sand, black, soft	0	Soil @ 9.5-10.5'
10.0'	12.0'	Clay with silt and trace stone, brown, stiff	0	
		End of Boring		

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

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SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-5
Total Depth:	12'

Site Address:	14534 Woodward Avenue Highland Park, MI
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Date Completed:	10/23/2013
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Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	1.5'	Clay with sand and silt, black, soft	0	
1.5'	3.0'	Clay with sand and silt, grey, soft	0.1	
3.0'	6.0'	Clay with sand, silt, and trace stone, brown and grey mottling, soft	0.1	
6.0'	9.0'	Clay with silt and trace stone, brown and grey mottling, brown, stiff	0	
9.0'	12.0'	Clay with silt and trace stone, brown, stiff	0	Soil @ 9-10'
		End of Boring		

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

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SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-6
Total Depth:	8'

Site Address:	14534 Woodward Avenue Highland Park, MI
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Date Completed:	10/23/2013
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Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	0.5'	Concrete	0	
0.5'	2.5'	Sandy clay, medium stiff, black and brown mottling, medium stiff	0.1	Soil @ 1.5-2.5'
2.5'	4.5'	Clay with silt and some sand, black and brown mottling, soft	0	
4.5'	8.0'	Clay with silt, brown with grey mottling, soft End of Boring	0	

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

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SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-7
Total Depth:	8'

Site Address:	14534 Woodward Avenue Highland Park, MI
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Date Completed:	10/23/2013
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Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	0.5'	Concrete	0.0	
0.5	2.0'	Sandy clay with trace stone, damp, soft, pieces of black stone	0.0	
2.0'	3.5'	Fine to medium grained sand with clay, black, pieces of brick	0.1	Soil @ 3-4'
3.5'	5.0'	Clay with silt, brown & grey mottling, soft	0.1	
5.0'	7.0'	Clay with silt and trace stone, brown and grey mottling, soft	0.0	
7.0'	8.0'	Clay with silt and trace stone, brown and grey mottling, medium stiff	0.0	
		End of Boring		

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

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SOIL BORING LOG

Proj. Name:	Woodward Avenue
Proj. Number:	1-8482

Boring Data	
Boring ID:	SB-8
Total Depth:	5.5'

Site Address:	14534 Woodward Avenue Highland Park, MI
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Date Completed:	10/23/2013
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Drilled by:	Terra Probe
Method:	Direct Push
Geologist:	Sean Trowbridge

MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth		Description	PID (ppm)	Sample Depth
From	To			
0	0.5'	Concrete	0	
0.5	1.0'	Fine to coarse grained sand with some clay and gravel, black, damp	0	Soil @ 0.5-1.5'
1.0'	2.5'	Sandy clay, brown, medium stiff	0	
2.5'	3.0'	Sandy clay, brown, medium stiff, pieces of clay tile and brick	0	
3.0'	5.5'	Clay with silt, brown, medium stiff	0	
		End of Boring		

ppm = parts per million

MW = monitoring well

TW = temporary monitoring well

bgs = below ground surface

Appendix B

Laboratory Analytical Results

Thursday, November 20, 2014

Fibertec Project Number: 65302
Project Identification: Highland Park Model T Site 14534 Woodward Ave. Highland Park, MI/
Submittal Date: 11/13/2014

Mr. Brett Shoaff
AKT Peerless Environ. Svcs, Inc. - Farm. Hills
22725 Orchard Lake Road
Farmington Hills, MI 48336

Dear Mr. Shoaff,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 14 days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,



Daryl P. Strandbergh
Laboratory Director

DPS/cdh

Enclosures

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Analytical Laboratory Report
Laboratory Project Number: 65302
Laboratory Sample Number: 65302-001

Order: 65302
Page: 2 of 7
Date: 11/20/14

Client Identification:	AKT Peerless Environ. Svcs, Inc. - Farm. Hills	Sample Description:	HPMT-SB01(7)111214	Chain of Custody:	132457
Client Project Name:	Highland Park Model T Site	Sample No:	1	Collect Date:	11/12/14
Client Project No:	NA	Sample Matrix:	Soil/Solid	Collect Time:	09:30
Sample Comments: Soil results have been calculated and reported on a dry weight basis unless otherwise noted.					
Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable †: Parameter not included in NELAC Scope of Analysis.					

Dry Weight Determination (ASTM D 2974-87)						Aliquot ID: 65302-001		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
† 1. Percent Moisture (Water Content)										
1. Percent Moisture (Water Content)	12	%		0.1	1.0	11/17/14	MC141117	11/18/14	MC141117	BMG
Trace Elements by ICP/MS (EPA 0200.2-M/EPA 6020A)						Aliquot ID: 65302-001		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Arsenic	5700	µg/kg	100	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
2. Lead	6600	µg/kg		1000	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
Polynuclear Aromatic Hydrocarbons (PNAs) (EPA 3546/EPA 8270C)						Aliquot ID: 65302-001		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Acenaphthene	U	µg/kg	330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
2. Acenaphthylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
3. Anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
4. Benzo(a)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
5. Benzo(a)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
6. Benzo(b)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
7. Benzo(ghi)perylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
8. Benzo(k)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
9. Chrysene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
10. Dibenzo(a,h)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
11. Fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
12. Fluorene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
13. Indeno(1,2,3-cd)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
14. 2-Methylnaphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
15. Naphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
16. Phenanthrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
17. Pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA

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Analytical Laboratory Report
Laboratory Project Number: 65302
Laboratory Sample Number: 65302-002

Order: 65302
Page: 3 of 7
Date: 11/20/14

Client Identification:	AKT Peerless Environ. Svcs, Inc. - Farm. Hills	Sample Description:	HPMT-SB02(7')111214	Chain of Custody:	132457
Client Project Name:	Highland Park Model T Site	Sample No:	2	Collect Date:	11/12/14
Client Project No:	NA	Sample Matrix:	Soil/Solid	Collect Time:	10:00
Sample Comments: Soil results have been calculated and reported on a dry weight basis unless otherwise noted.					
Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable †: Parameter not included in NELAC Scope of Analysis.					

Dry Weight Determination (ASTM D 2974-87)						Aliquot ID: 65302-002		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
† 1. Percent Moisture (Water Content)	17	%		0.1	1.0	11/17/14	MC141117	11/18/14	MC141117	BMG
Trace Elements by ICP/MS (EPA 0200.2-M/EPA 6020A)						Aliquot ID: 65302-002		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Arsenic	4400	µg/kg	100	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
2. Lead	29000	µg/kg		1000	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
Polynuclear Aromatic Hydrocarbons (PNAs) (EPA 3546/EPA 8270C)						Aliquot ID: 65302-002		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Acenaphthene	U	µg/kg	330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
2. Acenaphthylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
3. Anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
4. Benzo(a)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
5. Benzo(a)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
6. Benzo(b)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
7. Benzo(ghi)perylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
8. Benzo(k)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
9. Chrysene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
10. Dibenzo(a,h)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
11. Fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
12. Fluorene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
13. Indeno(1,2,3-cd)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
14. 2-Methylnaphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
15. Naphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
16. Phenanthrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
17. Pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA

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Analytical Laboratory Report
Laboratory Project Number: 65302
Laboratory Sample Number: 65302-003

Order: 65302
Page: 4 of 7
Date: 11/20/14

Client Identification:	AKT Peerless Environ. Svcs, Inc. - Farm. Hills	Sample Description:	HPMT-SB03(7.5')111214	Chain of Custody:	132457
Client Project Name:	Highland Park Model T Site	Sample No:	3	Collect Date:	11/12/14
Client Project No:	NA	Sample Matrix:	Soil/Solid	Collect Time:	10:20
Sample Comments: Soil results have been calculated and reported on a dry weight basis unless otherwise noted.					
Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable †: Parameter not included in NELAC Scope of Analysis.					

Dry Weight Determination (ASTM D 2974-87)						Aliquot ID: 65302-003		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
† 1. Percent Moisture (Water Content)	12	%		0.1	1.0	11/17/14	MC141117	11/18/14	MC141117	BMG
Trace Elements by ICP/MS (EPA 0200.2-M/EPA 6020A)						Aliquot ID: 65302-003		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Arsenic	5800	µg/kg	100	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
2. Lead	7500	µg/kg		1000	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
Polynuclear Aromatic Hydrocarbons (PNAs) (EPA 3546/EPA 8270C)						Aliquot ID: 65302-003		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Acenaphthene	U	µg/kg	330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
2. Acenaphthylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
3. Anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
4. Benzo(a)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
5. Benzo(a)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
6. Benzo(b)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
7. Benzo(ghi)perylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
8. Benzo(k)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
9. Chrysene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
10. Dibenzo(a,h)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
11. Fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
12. Fluorene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
13. Indeno(1,2,3-cd)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
14. 2-Methylnaphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
15. Naphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
16. Phenanthrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
17. Pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA

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Client Identification:	AKT Peerless Environ. Svcs, Inc. - Farm. Hills	Sample Description:	HPMT-SB04(7)111214	Chain of Custody:	132457
Client Project Name:	Highland Park Model T Site	Sample No:	4	Collect Date:	11/12/14
Client Project No:	NA	Sample Matrix:	Soil/Solid	Collect Time:	11:00
Sample Comments: Soil results have been calculated and reported on a dry weight basis unless otherwise noted.					
Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable †: Parameter not included in NELAC Scope of Analysis.					

Dry Weight Determination (ASTM D 2974-87)						Aliquot ID: 65302-004		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
† 1. Percent Moisture (Water Content)	13	%		0.1	1.0	11/17/14	MC141117	11/18/14	MC141117	BMG
Trace Elements by ICP/MS (EPA 0200.2-M/EPA 6020A)						Aliquot ID: 65302-004		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
1. Arsenic	10000	µg/kg		100	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
2. Lead	7400	µg/kg		1000	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
Polynuclear Aromatic Hydrocarbons (PNAs) (EPA 3546/EPA 8270C)						Aliquot ID: 65302-004		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
1. Acenaphthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
2. Acenaphthylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
3. Anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
4. Benzo(a)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
5. Benzo(a)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
6. Benzo(b)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
7. Benzo(ghi)perylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
8. Benzo(k)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
9. Chrysene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
10. Dibenzo(a,h)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
11. Fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
12. Fluorene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
13. Indeno(1,2,3-cd)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
14. 2-Methylnaphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
15. Naphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
16. Phenanthrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
17. Pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA



Analytical Laboratory Report
Laboratory Project Number: 65302
Laboratory Sample Number: 65302-005

Order: 65302
Page: 6 of 7
Date: 11/20/14

Client Identification:	AKT Peerless Environ. Svcs, Inc. - Farm. Hills	Sample Description:	HPMT-SB04(7')111214D	Chain of Custody:	132457
Client Project Name:	Highland Park Model T Site	Sample No:	5	Collect Date:	11/12/14
Client Project No:	NA	Sample Matrix:	Soil/Solid	Collect Time:	11:01
Sample Comments: Soil results have been calculated and reported on a dry weight basis unless otherwise noted.					
Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable †: Parameter not included in NELAC Scope of Analysis.					

Dry Weight Determination (ASTM D 2974-87)						Aliquot ID: 65302-005		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
† 1. Percent Moisture (Water Content)	13	%		0.1	1.0	11/17/14	MC141117	11/18/14	MC141117	BMG
Trace Elements by ICP/MS (EPA 0200.2-M/EPA 6020A)						Aliquot ID: 65302-005		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Arsenic	7900	µg/kg	100	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
2. Lead	5900	µg/kg		1000	20	11/19/14	PT14K19B	11/19/14	T414K19B	JLH
Polynuclear Aromatic Hydrocarbons (PNAs) (EPA 3546/EPA 8270C)						Aliquot ID: 65302-005		Matrix: Soil/Solid		
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
	1. Acenaphthene	U	µg/kg	330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
2. Acenaphthylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
3. Anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
4. Benzo(a)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
5. Benzo(a)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
6. Benzo(b)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
7. Benzo(ghi)perylene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
8. Benzo(k)fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
9. Chrysene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
10. Dibenzo(a,h)anthracene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
11. Fluoranthene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
12. Fluorene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
13. Indeno(1,2,3-cd)pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
14. 2-Methylnaphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
15. Naphthalene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
16. Phenanthrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA
17. Pyrene	U	µg/kg		330	1.0	11/17/14	PS14K17E	11/17/14	S514K17B	BDA

Definitions/ Qualifiers:

- A: Spike recovery or precision unusable due to dilution.
- B: The analyte was detected in the associated method blank.
- E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J: The concentration is an estimated value.
- M: Modified Method
- U: The analyte was not detected at or above the reporting limit.
- X: Matrix Interference has resulted in a raised reporting limit or distorted result.
- W: Results reported on a wet-weight basis.
- *: Value reported is outside QA limits

Exception Summary:

Accreditation Number(s):

E-10395 (KS)**T104704518-13-1 (TX)**

Fibertec
environmental
services

1914 Holloway Drive
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Phone: 517 699 0345
Fax: 517 699 0388
email: lab@fibertec.us

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email: asbestos@fibertec.us

Geoprobe
11766 E. Grand River
Brighton, MI 48116
Phone: 810 220 3300
Fax: 810 220 3311

Chain of Custody #
132457

PAGE 1 of 1

Client Name: A&T PESTLESS			PARAMETERS			Turnaround			Matrix Code			Deliverables		
Contact Person: BETTI STAFF														
Project Name/ Number: H. Highland Park Model T Site														
QUOTE#														
Purchase Order#	3010F2 1-20													
Lab Sample #	Date	Client Sample #	Client Sample Descriptor			Remarks:								
11/12 0930	1	HPMT-SB01(7')111214	S 1 X X											
11/12 1000	2	HPMT-SB02(7')111214	S 1 X X											
11/12 1020	3	HPMT-SB03(7.5')111214	S 1 X X											
11/12 1100	4	HPMT-SB04(7')111214	S 1 X X											
11/12 1101	5	HPMT-SB04(7')111214D	S 1 X X											
Comments:														
Relinquished By: Brett Shantz / B.S.	Date/ Time		Received By: Dickie Shantz											
Relinquished By: Dickie Shantz	Date/ Time		Received By: John Shantz											
Relinquished By: Dickie Shantz	Date/ Time		Received By Laboratory: John Shantz											
LAB USE ONLY: Fibertec project number: 5,33	Date/ Time													

COC Revision: February, 2013	65302
TERMS & CONDITIONS ON BACK	

ICE

Fibertec
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services

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Chain of Custody #
132458
PAGE 1 of 1
Geoprobe
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Fax: 810 220 3311

Industrial Hygiene Services, Inc.
1914 Holloway Drive
Holt, MI 48842
Phone: 517 699 0345
Fax: 517 699 0382
email: asbestos@fibertec.us

PARAMETERS				Turnaround	Matrix Code	Deliverables
				24 hour RUSH (surcharge applies)	S	GW/Ground Water
				48 hour RUSH (surcharge applies)	A	SW/Surface Water
				72 hour RUSH (surcharge applies)	O	WW/Waste Water
				Standard (5-7 bus. days)	P	X/Other: Specify
				Other: Specify		<input type="checkbox"/> EDD
						<input type="checkbox"/> FES Drilling Services
Remarks:						
PNA's						
AS, P6						
# OF CONTAINERS						
MATRIX (LEFT CORNER FOR CODE)						
PRESERVED (Y/N)						
Client Sample Descriptor						
Purchase Order#	2010 F2 1-20	Client Sample #				
Lab Sample #	Date	Time				
11/12	11/20	/	HPMT-SB05(2')	11/214	S	X X
11/12	11/30	2	HPMT-SB06(2')	11/214	S	X X
11/12	11/30	3	HPMT-SB06(2')	11/214M5	S	X X
11/12	11/30	4	HPMT-SB06(2')	11/214MSD	S	X X
11/12	11/35	5	HPMT-SB07(2')	11/214	S	X X
11/12	11/45	6	HPMT-SB08(2')	11/214	S	X X
11/12	12/00	7	HPMT-SB09(2')	11/214	S	X X
11/12	12/10	8	HPMT-SB10(2.5')	11/214	S	X X
11/12	12/20	9	HPMT-SB11(2')	11/214	S	X X
11/12	13/20	10	HPMT-SB12(2')	11/214	S	X X

Comments:

Relinquished By: <i>Brett Shaffner</i>	Date/ Time	Received By: <i>John Shaffner</i>
Relinquished By: <i>John Shaffner</i>	Date/ Time	Received By: <i>John Shaffner</i>
Relinquished By: <i>John Shaffner</i>	Date/ Time	Received By Laboratory: <i>John Shaffner</i>

LAB USE ONLY:
Fibertec project number:
Laboratory Tracking:
Temperature at Receipt: **59.2°**

65305

TERMS & CONDITIONS ON BACK

COC Revision: February, 2013

ICE



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Chain of Custody #
132459
PAGE 2 of 2

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Chain of Custody #
132459
PAGE 2 of 2

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Phone: 810 220 3300
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CERTIFICATE OF ANALYSIS

CHAIN-OF-CUSTODY RECORD

Client Name:	ASTI - Environment	Phone	231.773.5998	Trace Analytical Laboratories, Inc.
the science of compliance		toll-free	800.733.5998	2241 Black Creek Road
Fax	231.773.6537			Muskegon, MI 49444-2673
				www.trace-labs.com
Contact Person:	Sean Trabold	Report Results To:	10448 Churn Drive	City, State, Zip Code: Brillion WI 48116
Mailing Address:		Phone:	810-225-3800	Phone: 810-225-3800
Email Address:		Fax:		Fax: 810-225-3800
Cell #:		Sampled by:	Sean Trabold	Sampled by: Sean Trabold
Project Name & #:	Add on for Nizward fire 8/9/02	Billing Address (if different)		
Bill To:		City, State, Zip Code		
Attn:		Phone:		PO #: _____
Request for Analytical Services	TRACE NO.	DATE TAKEN	TIME TAKEN	CLIENT SAMPLE ID
10-23-03	SB-40	0-5-1.5'	52XX	
Item #	RELEASED BY	RECEIVED BY	DATE	TIME
1) Sean Trabold's first stra of 10/23/03	2) ASTI Staff	John Z.	10/30/03	14:40
2) ASTI Staff	John Z.	John Z.	10/30/03	8:05

www.trace-labs.com

info@trace-labs.com

2241 Black Creek Road

Muskegon, MI 49444-2673

Trace Analytical Laboratories, Inc.

toll-free 231.773.5998

fax 231.773.6537

the existence of compliance

RELEASED BY

RECEIVED BY

DATE

TIME

TREC

In executing this Chain of Custody the client acknowledges acceptance of the terms and conditions of the agreement as set forth at <http://www.trace-labs.com/terms.html>

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA

WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial II & Commercial II Direct Contact" Criteria	EB-1	WB-1	EB-2	WB-2			
				01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)			
Hazardous Substances										
BTEX & MTBE										
Benzene	220,000	8,400	400,000	72	ND	ND	ND			
Ethylbenzene	140,000	140,000	140,000	ND	ND	ND	ND			
Methyl-tert-butyl ether	5,900,000	5,900,000	5,900,000	ND	ND	ND	ND			
Toluene	250,000	250,000	250,000	ND	ND	ND	ND			
Xylenes	150,000	150,000	150,000	160	ND	ND	ND			
VOLATILES										
Acetone	110,000,000	110,000,000	110,000,000	ND	ND	ND	ND			
Acrylonitrile	280,000	35,000	110,000	ND	ND	ND	ND			
Bromobenzene	360,000	580,000	760,000	ND	ND	ND	ND			
Bromodichloromethane	280,000	6,400	750,000	ND	ND	ND	ND			
Bromoform	870,000	770,000	870,000	ND	ND	ND	ND			
Bromomethane	1,400,000	1,600	1,600,000	ND	ND	ND	ND			
2-Butanone	27,000,000	27,000,000	27,000,000	ND	ND	ND	ND			
n-Butylbenzene	120,000	ID	10,000,000	ND	ND	ND	ND			
tert-Butylbenzene	180,000	ID	10,000,000	ND	ND	ND	ND			
Carbon disulfide	280,000	140,000	280,000	ND	ND	ND	ND			
Carbon tetrachloride	92,000	990	390,000	ND	ND	ND	ND			
Chlorobenzene	260,000	220,000	260,000	ND	ND	ND	ND			
Chlorethane	950,000	950,000	950,000	ND	ND	ND	ND			
2-Chloroethyl vinyl ether	ID	ID	ID	ND	ND	ND	ND			
Chloroform	1,500,000	38,000	1,500,000	ND	ND	ND	ND			
Chloromethane	1,100,000	12,000	1,100,000	ND	ND	ND	ND			
Dibromochloromethane	360,000	21,000	610,000	ND	ND	ND	ND			
Dibronomethane	2,000,000	ID	2,000,000	ND	ND	ND	ND			
Dichlorodifluoromethane	1,000,000	1,000,000	1,000,000	ND	ND	ND	ND			
1,1-Dichloroethane	890,000	430,000	890,000	ND	ND	ND	ND			
1,2-Dichloroethane	380,000	11,000	640,000	ND	ND	ND	ND			

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	"Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Soil & Commercial II Direct Contact" Criteria	EB-1 01/06/03 (ppb)	WB-1 01/06/03 (ppb)	EB-2 01/06/03 (ppb)	WB-2 01/06/03 (ppb)
		MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	EB-1 01/06/03 (ppb)	WB-1 01/06/03 (ppb)	EB-2 01/06/03 (ppb)	WB-2 01/06/03 (ppb)
1,1-Dichloroethylene	220,000	330	570,000	ND	ND	ND	ND
cis-1,2-Dichloroethylene	640,000	42,000	640,000	ND	ND	ND	ND
trans-1,2-Dichloroethylene	1,400,000	43,000	1,400,000	ND	ND	ND	ND
1,2-Dichloropropane	320,000	7,400	550,000	ND	ND	ND	ND
1,3-Dichloropropene	260,000	10	620,000	ND	ND	ND	ND
Diethyl ether	7,400,000	7,400,000	7,400,000	ND	ND	ND	ND
2-Hexanone	2,500,000	1,800,000	2,500,000	ND	ND	ND	ND
Isopropyl benzene	390,000	390,000	390,000	ND	ND	ND	ND
Methanol	3,100,000	1,200,000	3,100,000	ND	ND	ND	ND
4-Methyl-2-pentanone	2,700,000	2,700,000	2,700,000	ND	ND	ND	ND
Methylene chloride	2,300,000	240,000	2,300,000	ND	ND	ND	ND
Pentane	ID	240,000	ID	ND	ND	ND	ND
n-Propylbenzene	300,000	ID	10,000,000	ND	ND	ND	ND
Styrene	270,000	520,000	520,000	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	440,000	33,000	440,000	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	94,000	23,000	370,000	ND	ND	ND	ND
Tetrachloroethylene	88,000	60,000	88,000	ND	ND	ND	ND
1,1,1,2-Trichloroethane	460,000	460,000	460,000	ND	ND	ND	ND
1,1,2-Trichloroethane	420,000	24,000	920,000	ND	ND	ND	ND
Trichloroethylene	500,000	37,700	500,000	ND	ND	ND	ND
Trichlorofluoromethane	560,000	560,000	560,000	ND	ND	ND	ND
1,2,3-Trichloropropane	830,000	ID	830,000	ND	ND	ND	ND
1,2,4-Trimethylbenzene	110,000	N.L.V.	110,000	ND	ND	ND	ND
1,3,5-Trimethylbenzene	94,000	94,000	94,000	ND	ND	ND	ND
Vinyl chloride	11,000	150	29,000	ND	ND	ND	ND
INORGANICS							
Cadmium	230,000,000	N.L.V.	4,100,000	1,900	1,300	710	690
Chromium	{G,X}	N.L.V.	1,000,000,000	17,000	14,000	14,000	15,000
Lead	ID	N.L.V.	900,000	23,000	18,000	7,400	6,300

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	"Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	EB-1 01/06/03 (ppb)	WB-1 01/06/03 (ppb)	EB-2 01/06/03 (ppb)	WB-2 01/06/03 (ppb)
	PNAS						
Acenaphthene	970,000	350,000,000	200,000,000	ND	ND	ND	ND
Acenaphthylene	440,000	3,000,000	8,000,000	ND	ND	ND	ND
Anthracene	41,000	1,000,000,000	1,000,000,000	ND	ND	ND	ND
Benz(a)anthracene	NLL	NLV	100,000	ND	ND	ND	ND
Benz(b)fluoranthene	NLL	NLV	100,000	ND	ND	ND	ND
Benz(k)fluoranthene	NLL	NLV	1,000,000	ND	ND	ND	ND
Benz(g,h,i)perylene	NLL	NLV	9,100,000	ND	ND	ND	ND
Benz(a)pyrene	NLL	NLV	10,000	ND	ND	ND	ND
Chrysene	NLL	ID	10,000,000	ND	ND	ND	ND
Fluoranthene	730,000	1,000,000,000	180,000,000	ND	ND	ND	ND
Fluorene	890,000	1,000,000,000	130,000,000	ND	ND	ND	ND
2-Methylnaphthalene	5,500,000	ID	40,000,000	ND	460	ND	ND
Naphthalene	2,100,000	470,000	80,000,000	ND	ND	ND	290
Phenanthrene	1,100,000	3,300,000	8,000,000	ND	ND	ND	ND
Pyrene	480,000	1,000,000,000	110,000,000	ND	ND	ND	ND
PBBs							
Polybrominated biphenyls	NLL	NLV	6,600	ND	ND	ND	ND

NA: NOT ANALYZED

ND: NOT DETECTED

ID: Chemical has either not been evaluated or inadequate data precludes the development of criteria

NLL: Not likely to leach under most conditions

NLV: Not likely to volatilize under most conditions

72 CONCENTRATION DETECTED ABOVE THE METHOD DETECTION LIMIT

NONE CONCENTRATION DETECTED ABOVE THE APPLICABLE MDEQ CRITERIA

*Commercial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5

*Industrial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	"Groundwater Contact Protection" Criteria	MDEQ "Soil Volatization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	SB-1 01/06/03 (ppb)	NSW-1 01/06/03 (ppb)	NSW-2 01/06/03 (ppb)	SSW-1 01/06/03 (ppb)
	Hazardous Substances						
BTEX & MTBE							
Benzene	220,000	8,400	400,000	ND	ND	ND	62
Ethylbenzene	140,000	140,000	140,000	ND	ND	ND	ND
Methyl-tert-butyl ether	5,900,000	5,900,000	5,900,000	ND	ND	ND	ND
Toluene	250,000	250,000	250,000	ND	ND	ND	ND
Xylenes	150,000	150,000	150,000	ND	ND	ND	ND
VOLATILES							
Acetone	110,000,000	110,000,000	110,000,000	ND	ND	ND	ND
Acrylonitrile	280,000	35,000	110,000	ND	ND	ND	ND
Bromobenzene	360,000	580,000	760,000	ND	ND	ND	ND
Bromodichloromethane	280,000	6,400	750,000	ND	ND	ND	ND
Bromoform	870,000	770,000	870,000	ND	ND	ND	ND
Bromomethane	1,400,000	1,600	1,600,000	ND	ND	ND	ND
2-Butanone	27,000,000	27,000,000	27,000,000	ND	ND	ND	ND
n-Butylbenzene	120,000	ID	10,000,000	ND	ND	ND	ND
tert-Butylbenzene	180,000	ID	10,000,000	ND	ND	ND	ND
Carbon disulfide	280,000	140,000	280,000	ND	ND	ND	ND
Carbon tetrachloride	92,000	990	390,000	ND	ND	ND	ND
Chlorobenzene	260,000	220,000	260,000	ND	ND	ND	ND
Chloroethane	950,000	950,000	950,000	ND	ND	ND	ND
2-Chloroethyl vinyl ether	ID	ID	ID	ND	ND	ND	ND
Chloroform	1,500,000	38,000	1,500,000	ND	ND	ND	ND
Chloromethane	1,100,000	12,000	1,100,000	ND	ND	ND	ND
Dibromochloromethane	360,000	21,000	610,000	ND	ND	ND	ND
Dibromomethane	2,000,000	ID	2,000,000	ND	ND	ND	ND
Dichlorodifluoromethane	1,000,000	1,000,000	1,000,000	ND	ND	ND	ND
1,1-Dichloroethane	890,000	430,000	890,000	ND	ND	ND	ND
1,2-Dichloroethane	380,000	11,000	640,000	ND	ND	ND	ND

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	SB-1 01/06/03 (ppb)	NSW-1 01/06/03 (ppb)	NSW-2 01/06/03 (ppb)	SSW-1 01/06/03 (ppb)
				01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)
1,1-Dichloroethylene	220,000	330	570,000	ND	ND	ND	ND
cis-1,2-Dichloroethylene	640,000	42,000	640,000	ND	ND	ND	ND
trans-1,2-Dichloroethylene	1,400,000	43,000	1,400,000	ND	ND	ND	ND
1,2-Dichloropropane	320,000	7,400	550,000	ND	ND	ND	ND
1,3-Dichloropropene	260,000	10	620,000	ND	ND	ND	ND
Diethyl ether	7,400,000	7,400,000	ND	ND	ND	ND	ND
2-Hexanone	2,500,000	1,800,000	2,500,000	ND	ND	ND	ND
Isopropyl benzene	390,000	390,000	390,000	ND	ND	ND	ND
Methanol	3,100,000	1,200,000	3,100,000	ND	ND	ND	ND
4-Methyl-2-pentanone	2,700,000	2,700,000	2,700,000	ND	ND	ND	ND
Methylene chloride	2,300,000	240,000	2,300,000	ND	ND	ND	ND
Pentane	ID	240,000	ID	ND	ND	ND	ND
n-Propylbenzene	300,000	ID	10,000,000	ND	ND	ND	ND
Styrene	270,000	520,000	520,000	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	440,000	33,000	440,000	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	94,000	23,000	370,000	ND	ND	ND	ND
Tetrachloroethylene	88,000	60,000	88,000	ND	ND	ND	ND
1,1,1-Trichloroethane	460,000	460,000	460,000	ND	ND	ND	ND
1,1,2-Trichloroethane	420,000	24,000	920,000	ND	ND	ND	ND
Trichloroethylene	500,000	37,000	500,000	ND	ND	ND	ND
Trichlorofluoromethane	560,000	560,000	560,000	ND	ND	ND	ND
1,2,3-Trichloropropane	830,000	ID	830,000	ND	ND	ND	ND
1,2,4-Trimethylbenzene	110,000	NLV	110,000	ND	ND	ND	ND
1,3,5-Trimethylbenzene	94,000	94,000	94,000	ND	ND	ND	ND
Vinyl chloride	11,000	150	29,000	ND	ND	ND	ND
INORGANICS							
Cadmium	230,000,000	NLV	4,100,000	850	800	890	940
Chromium	{GX}	NLV	1,000,000,000	16,000	14,000	13,000	19,000
Lead	ID	NLV	900,000	9,000	8,200	8,200	54,000

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial II & Commercial II Direct Contact" Criteria	SB-1	NSW-1	NSW-2	SSW-1
				01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)
PNA's							
Acenaphthene	970,000	350,000,000	200,000,000	ND	ND	ND	ND
Acenaphthylene	440,000	3,000,000	8,000,000	ND	ND	ND	ND
Anthracene	41,000	1,000,000,000	1,000,000,000	ND	ND	ND	ND
Benzo(a)anthracene	NLL	NLV	100,000	ND	ND	ND	ND
Benzo(b)fluoranthene	NLL	NLV	100,000	ND	ND	ND	ND
Benzo(k)fluoranthene	NLL	NLV	1,000,000	ND	ND	ND	ND
Benzo(g,h,i)perylene	NLL	NLV	9,100,000	ND	ND	ND	ND
Benzo(a)pyrene	NLL	NLV	10,000	ND	ND	ND	ND
Chrysene	NLL	ID	10,000,000	ND	ND	ND	ND
Fluoranthene	730,000	1,000,000,000	180,000,000	ND	ND	ND	ND
Fluorene	890,000	1,000,000,000	130,000,000	ND	ND	ND	ND
2-Methylnaphthalene	5,500,000	ID	40,000,000	ND	ND	ND	ND
Naphthalene	2,100,000	470,000	80,000,000	ND	ND	ND	ND
Phenanthrene	1,100,000	3,300,000	8,000,000	ND	ND	ND	ND
Pyrene	480,000	1,000,000,000	110,000,000	ND	ND	ND	ND
PBBs							
Polybrominated biphenyls	NLL	NLV	6,600	ND	ND	ND	ND

NA: NOT ANALYZED

ND: NOT DETECTED

ID: Chemical has either not been evaluated or inadequate
data precludes the development of criteria

NLL: Not likely to leach under most conditions
NLV: Not likely to volatilize under most conditions

850 CONCENTRATION DETECTED ABOVE
THE METHOD DETECTION LIMIT

NONE CONCENTRATION DETECTED ABOVE
THE APPLICABLE MDEQ CRITERIA

*Commercial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5

*Industrial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial II & Commercial II Direct Contact" Criteria	SSW-2	ESW-1	ESW-2	WSW-1 01/06/03 (ppb)			
				01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)			
Hazardous Substances										
BTEX & MTBE										
Benzene	220,000	8,400	400,000	52	120	ND	62			
Ethylbenzene	140,000	140,000	140,000	ND	ND	ND	ND			
Methyl-tert-butyl ether	5,900,000	5,900,000	5,900,000	ND	ND	ND	ND			
Toluene	250,000	250,000	250,000	85	150	160	150			
Xylenes	150,000	150,000	150,000	ND	220	310	ND			
VOLATILES										
Acetone	110,000,000	110,000,000	110,000,000	ND	ND	ND	ND			
Acrylonitrile	280,000	35,000	110,000	ND	ND	ND	ND			
Bromobenzene	360,000	580,000	760,000	ND	ND	ND	ND			
Bromodichloromethane	280,000	6,400	750,000	ND	ND	ND	ND			
Bromoform	870,000	770,000	870,000	ND	ND	ND	ND			
Bromomethane	1,400,000	1,600	1,600,000	ND	ND	ND	ND			
2-Butanone	27,000,000	27,000,000	27,000,000	ND	ND	ND	ND			
n-Butylbenzene	120,000	ID	10,000,000	ND	ND	ND	ND			
tert-Butylbenzene	180,000	ID	10,000,000	ND	ND	ND	ND			
Carbon disulfide	280,000	140,000	280,000	ND	ND	ND	ND			
Carbon tetrachloride	92,000	990	390,000	ND	ND	ND	ND			
Chlorobenzene	260,000	220,000	260,000	ND	ND	ND	ND			
Chloroethane	950,000	950,000	950,000	ND	ND	ND	ND			
2-Chloroethyl vinyl ether	ID	ID	ID	ND	ND	ND	ND			
Chloroform	1,500,000	38,000	1,500,000	ND	ND	ND	ND			
Chloromethane	1,100,000	12,000	1,100,000	ND	ND	ND	ND			
Dibromochloromethane	360,000	21,000	610,000	ND	ND	ND	ND			
Dibromomethane	2,000,000	ID	2,000,000	ND	ND	ND	ND			
Dichlorodifluoromethane	1,000,000	1,000,000	1,000,000	ND	ND	ND	ND			
1,1-Dichloroethane	890,000	430,000	890,000	ND	ND	ND	ND			
1,2-Dichloroethane	380,000	11,000	640,000	ND	ND	ND	ND			

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial II & Commercial II Direct Contact" Criteria	SSW-2 01/06/03 (ppb)	ESW-1 01/06/03 (ppb)	ESW-2 01/06/03 (ppb)	WSW-1 01/06/03 (ppb)
				01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)	01/06/03 (ppb)
1,1-Dichloroethylene	220,000	330	570,000	ND	ND	ND	ND
cis-1,2-Dichloroethylene	640,000	42,000	640,000	ND	ND	ND	ND
trans-1,2-Dichloroethylene	1,400,000	43,000	1,400,000	ND	ND	ND	ND
1,2-Dichloropropane	320,000	7,400	550,000	ND	ND	ND	ND
1,3-Dichloropropene	260,000	10	620,000	ND	ND	ND	ND
Diethyl ether	7,400,000	7,400,000	7,400,000	ND	ND	ND	ND
2-Hexanone	2,500,000	1,800,000	2,500,000	ND	ND	ND	ND
Isopropyl benzene	390,000	390,000	390,000	ND	ND	ND	ND
Methanol	3,100,000	1,200,000	3,100,000	ND	ND	ND	ND
4-Methyl-2-pentanone	2,700,000	2,700,000	2,700,000	ND	ND	ND	ND
Methylene chloride	2,300,000	240,000	2,300,000	ND	ND	ND	ND
Pentane	ID	240,000	ID	ND	ND	ND	ND
n-Propylbenzene	300,000		ID	10,000,000	ND	ND	ND
Syrene	270,000	520,000	520,000	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	440,000	33,000	440,000	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	94,000	23,000	370,000	ND	ND	ND	ND
Tetrachloroethylene	88,000	60,000	88,000	ND	ND	ND	ND
1,1,1-Trichloroethane	460,000	460,000	460,000	ND	ND	ND	ND
1,1,2-Trichloroethane	420,000	24,000	920,000	ND	ND	ND	ND
Trichloroethylene	500,000	37,000	500,000	ND	ND	ND	ND
Trichlorofluoromethane	560,000	560,000	560,000	ND	ND	ND	ND
1,2,3-Trichloropropane	830,000	ID	830,000	ND	ND	ND	ND
1,2,4-Trimethylbenzene	110,000	NLV	110,000	130	ND	ND	ND
1,3,5-Trimethylbenzene	94,000	94,000	94,000	ND	ND	ND	ND
Vinyl chloride	11,000	150	29,000	ND	ND	ND	ND
INORGANICS							
Cadmium	230,000,000	NLV	4,100,000	980	5,600	1,500	1,600
Chromium	{G,X}	NLV	1,000,000,000	14,000	18,000	24,000	14,000
Lead	ID	NLV	900,000	1,100,000	320,000	260,000	7,900

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	SSW-2 01/06/03 (ppb)	ESW-1 01/06/03 (ppb)	ESW-2 01/06/03 (ppb)	WSW-1 01/06/03 (ppb)
PNAs							
Acenaphthene	970,000	360,000,000	200,000,000	ND	ND	ND	ND
Acenaphthylene	440,000	3,000,000	8,000,000	ND	ND	ND	ND
Anthracene	41,000	1,000,000,000	1,000,000,000	ND	ND	ND	ND
Benzo(a)anthracene	NLL	NLV	100,000	ND	ND	ND	ND
Benzo(b)fluoranthene	NLL	NLV	100,000	ND	ND	ND	ND
Benzo(k)fluoranthene	NLL	NLV	1,000,000	ND	ND	ND	ND
Benzo(g,h,i)perylene	NLL	NLV	9,100,000	ND	ND	ND	ND
Benzo(a)pyrene	NLL	NLV	10,000	ND	ND	ND	ND
Chrysene	NLL	ID	10,000,000	ND	ND	ND	ND
Fluoranthene	730,000	1,000,000,000	180,000,000	ND	ND	490	ND
Fluorene	890,000	1,000,000,000	130,000,000	ND	ND	ND	ND
2-Methylnaphthalene	5,500,000	ID	40,000,000	390	ND	ND	ND
Naphthalene	2,100,000	470,000	80,000,000	580	ND	ND	ND
Phenanthrene	1,100,000	3,300,000	8,000,000	610	ND	ND	ND
Pyrene	480,000	1,000,000,000	110,000,000	ND	ND	410	ND
PBBS							
Polybrominated biphenyls	NLL	NLV	6,600	ND	ND	ND	ND

NA: NOT ANALYZED

ND: NOT DETECTED

ID: Chemical has either not been evaluated or inadequate
data precludes the development of criteria

NLL: Not likely to leach under most conditions
NLV: Not likely to volatilize under most conditions

52 CONCENTRATION DETECTED ABOVE
THE METHOD DETECTION LIMIT

1,100,000 CONCENTRATION DETECTED ABOVE
THE APPLICABLE MDEQ CRITERIA

*Commercial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5
*Industrial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	WSW-2 01/06/03 (ppb)	P1 01/06/03 (ppb)	P2 01/06/03 (ppb)	SS-1 01/06/03 (ppb)
Hazardous Substances							
BTEX & MTBE							
Benzene	220,000	8,400	400,000	ND	ND	ND	ND
Ethylbenzene	140,000	140,000	140,000	ND	ND	ND	ND
Methyl-tert-butyl ether	5,900,000	5,900,000	5,900,000	ND	ND	ND	ND
Toluene	250,000	250,000	250,000	ND	230	170	150
Xylenes	150,000	150,000	150,000	ND	290	ND	300
VOLATILES							
Acetone	110,000,000	110,000,000	110,000,000	ND	ND	ND	ND
Acrylonitrile	280,000	35,000	110,000	ND	ND	ND	ND
Bromobenzene	360,000	580,000	760,000	ND	ND	ND	ND
Bromodichloromethane	280,000	6,400	750,000	ND	ND	ND	ND
Bromoform	870,000	770,000	870,000	ND	ND	ND	ND
Bromomethane	1,400,000	1,600	1,600,000	ND	ND	ND	ND
2-Butanone	27,000,000	27,000,000	27,000,000	ND	ND	ND	ND
n-Butylbenzene	120,000	ID	10,000,000	ND	ND	ND	ND
tert-Butylbenzene	180,000	ID	10,000,000	ND	ND	ND	ND
Carbon disulfide	280,000	140,000	280,000	ND	ND	ND	ND
Carbon tetrachloride	92,000	990	390,000	ND	ND	ND	ND
Chlorobenzene	260,000	220,000	260,000	ND	ND	ND	ND
Chloroethane	950,000	950,000	950,000	ND	ND	ND	ND
2-Chloroethyl vinyl ether	ID	ID	ID	ND	ND	ND	ND
Chloroform	1,500,000	38,000	1,500,000	ND	ND	ND	ND
Chloromethane	1,100,000	12,000	1,100,000	ND	ND	ND	ND
Dibromochloromethane	360,000	21,000	610,000	ND	ND	ND	ND
Dibromomethane	2,000,000	ID	2,000,000	ND	ND	ND	ND
Dichlorodifluoromethane	1,000,000	1,000,000	1,000,000	ND	ND	ND	ND
1,1-Dichloroethane	890,000	430,000	890,000	ND	ND	ND	ND
1,2-Dichloroethane	380,000	11,000	640,000	ND	ND	ND	ND

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact" Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	WSW-2 01/06/03 (ppb)	P1 01/06/03 (ppb)	P2 01/06/03 (ppb)	SS-1 01/06/03 (ppb)
1,1-Dichloroethylene	220,000	330	570,000	ND	ND	ND	ND
cis-1,2-Dichloroethylene	640,000	42,000	640,000	ND	ND	ND	ND
trans-1,2-Dichloroethylene	1,400,000	43,000	1,400,000	ND	ND	ND	ND
1,2-Dichloropropane	320,000	7,400	550,000	ND	ND	ND	ND
1,3-Dichloropropene	260,000	10	620,000	ND	ND	ND	ND
Diethyl ether	7,400,000	7,400,000	7,400,000	ND	ND	ND	ND
2-Hexanone	2,500,000	1,800,000	2,500,000	ND	ND	ND	ND
Isopropyl benzene	390,000	390,000	390,000	ND	ND	ND	ND
Methanol	3,100,000	1,200,000	3,100,000	ND	ND	ND	ND
4-Methyl-2-pentanone	2,700,000	2,700,000	2,700,000	ND	ND	ND	ND
Methylene chloride	2,300,000	240,000	2,300,000	ND	ND	ND	ND
Pentane	ID	240,000	ID	ND	ND	ND	ND
n-Propylbenzene	300,000	ID	10,000,000	ND	ND	ND	ND
Styrene	270,000	520,000	520,000	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	440,000	33,000	440,000	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	94,000	23,000	370,000	ND	ND	ND	ND
Tetrachloroethylene	88,000	60,000	88,000	ND	ND	ND	ND
1,1,1-Trichloroethane	460,000	460,000	460,000	ND	ND	ND	ND
1,1,2-Trichloroethane	420,000	24,000	920,000	ND	ND	ND	ND
Trichloroethylene	500,000	37,000	500,000	ND	ND	ND	ND
Trichlorofluoromethane	560,000	560,000	560,000	ND	ND	ND	ND
1,2,3-Trichloropropene	830,000	ID	830,000	ND	ND	ND	ND
1,2,4-Trimethylbenzene	110,000	NLV	110,000	ND	ND	ND	150
1,3,5-Trimethylbenzene	94,000	94,000	94,000	ND	ND	ND	ND
Vinyl chloride	11,000	150	29,000	ND	ND	ND	ND
INORGANICS							
Cadmium	230,000,000	NLV	4,100,000	870	2,300	1,100	1,000
Chromium	{G,X}	NLV	1,000,000,000	18,000	15,000	17,000	14,000
Lead	ID	NLV	900,000	12,000	21,000	130,000	98,000

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS
APPLICATION OF GENERIC PART 201 COMMERCIAL INDUSTRIAL CRITERIA
WOODWARD MANCHESTER
SAMPLES COLLECTED ON JANUARY 6, 2003
CTI PROJECT NO.: 65010089-M

PARAMETERS	MDEQ "Groundwater Contact Protection" Criteria	MDEQ "Soil Volatilization to Indoor Air Inhalation" Criteria	MDEQ "Industrial & Commercial II Direct Contact" Criteria	WSW-2 01/06/03 (ppb)	P1 01/06/03 (ppb)	P2 01/06/03 (ppb)	SS-1 01/06/03 (ppb)
PNAs							
Acenaphthene	970,000	350,000,000	200,000,000	ND	ND	ND	ND
Acenaphthylene	440,000	3,000,000	8,000,000	ND	ND	ND	ND
Anthracene	41,000	1,000,000,000	1,000,000,000	ND	ND	ND	ND
Benzo(a)anthracene	NLL	NLV	100,000	ND	ND	ND	ND
Benzo(b)fluoranthene	NLL	NLV	100,000	ND	ND	ND	ND
Benzo(k)fluoranthene	NLL	NLV	1,000,000	ND	ND	ND	ND
Benzo(g,h,i)perylene	NLL	NLV	9,100,000	ND	ND	ND	ND
Benzo(a)pyrene	NLL	NLV	10,000	ND	ND	ND	ND
Chrysene	NLL	ID	10,000,000	ND	ND	ND	ND
Fluoranthene	730,000	1,000,000,000	180,000,000	ND	ND	540	ND
Fluorene	890,000	1,000,000,000	130,000,000	ND	ND	ND	ND
2-Methylnaphthalene	5,500,000	ID	40,000,000	ND	ND	ND	990
Naphthalene	2,100,000	470,000	80,000,000	ND	ND	ND	ND
Phenanthrene	1,100,000	3,300,000	8,000,000	ND	ND	ND	ND
Pyrene	480,000	1,000,000,000	110,000,000	ND	ND	450	ND
PBBs							
Polybrominated biphenyls	NLL	NLV	6,600	ND	ND	ND	ND

NA: NOT ANALYZED

ND: NOT DETECTED

ID: Chemical has either not been evaluated or inadequate data precludes the development of criteria

NLL: Not likely to leach under most conditions
 NLV: Not likely to volatilize under most conditions

870 CONCENTRATION DETECTED ABOVE THE METHOD DETECTION LIMIT

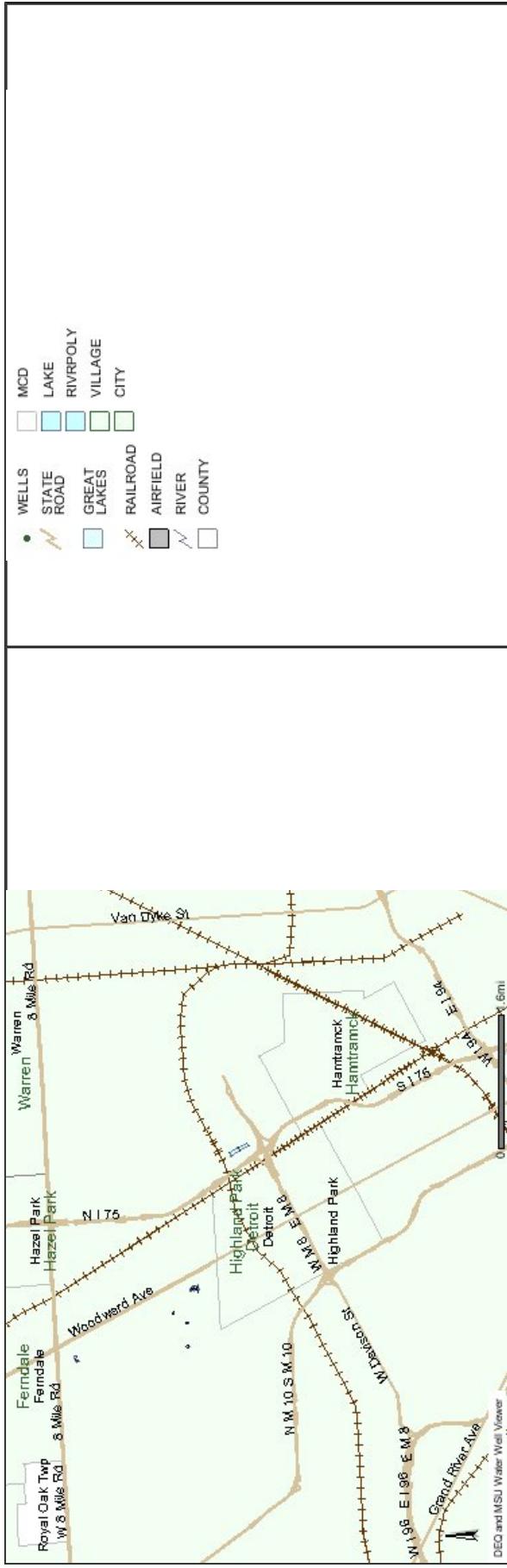
NONE CONCENTRATION DETECTED ABOVE THE APPLICABLE MDEQ CRITERIA

*Commercial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5
 *Industrial Criteria based on MDEQ's June 2000, Operational Memo No. 4, Attachment 2, Revision 5

Appendix C

Water WellViewer Information

91 Manchester, Highland Park, MI



Appendix D

LNAPL CSM

Light Non-Aqueous Phase Liquid Conceptual Site Model Summary
91 Manchester Street
Highland Park, Wayne County, Michigan
Facility ID#: 00041299

Mobile and/or Migrating LNAPL Present?	Mobile LNAPL has never been encountered during multiple subsurface investigations completed at the site between 2003 and 2014 in response to release C-0051-03.
Residual LNAPL Present?	Residual LNAPL at the site is likely very limited in extent. At no time during historical or recent site investigation activities did any soil samples exhibit concentrations exceeding the MDEQ Csat levels for soils remaining on-site. Soil impact at the site is limited to impacts exceeding MDEQ drinking water protection (DWP) and groundwater surface water interface protection (GSIP) with the exception of two soil samples which exhibited lead at concentrations exceeding the direct contact (DC) criteria.
Abatement and Recovery	No abatement or recovery of LNAPL has been completed, since no mobile LNAPL has been observed at the site.
Potential Receptors	Potential receptors include the future site employees, maintenance personnel, and members of the general public.
Results of LNAPL evaluation sampling	Given that soil impact has not been observed above Csat screening levels, sample collection for free product mobility testing was not necessary.
LNAPL CSM Conclusions	Based on the soil impact levels identified during multiple subsurface investigations, it is unlikely residual LNAPL remains on the site. Furthermore, free phase LNAPL has never been identified during th subsurface investigations completed at the site. As such, mobile LNAPL has not been identified at the site.

Note: This is a summary of the LNAPL Conceptual Site Model. The complete evaluation is included in Section 3.1 of this report.

Appendix E

VI CSM

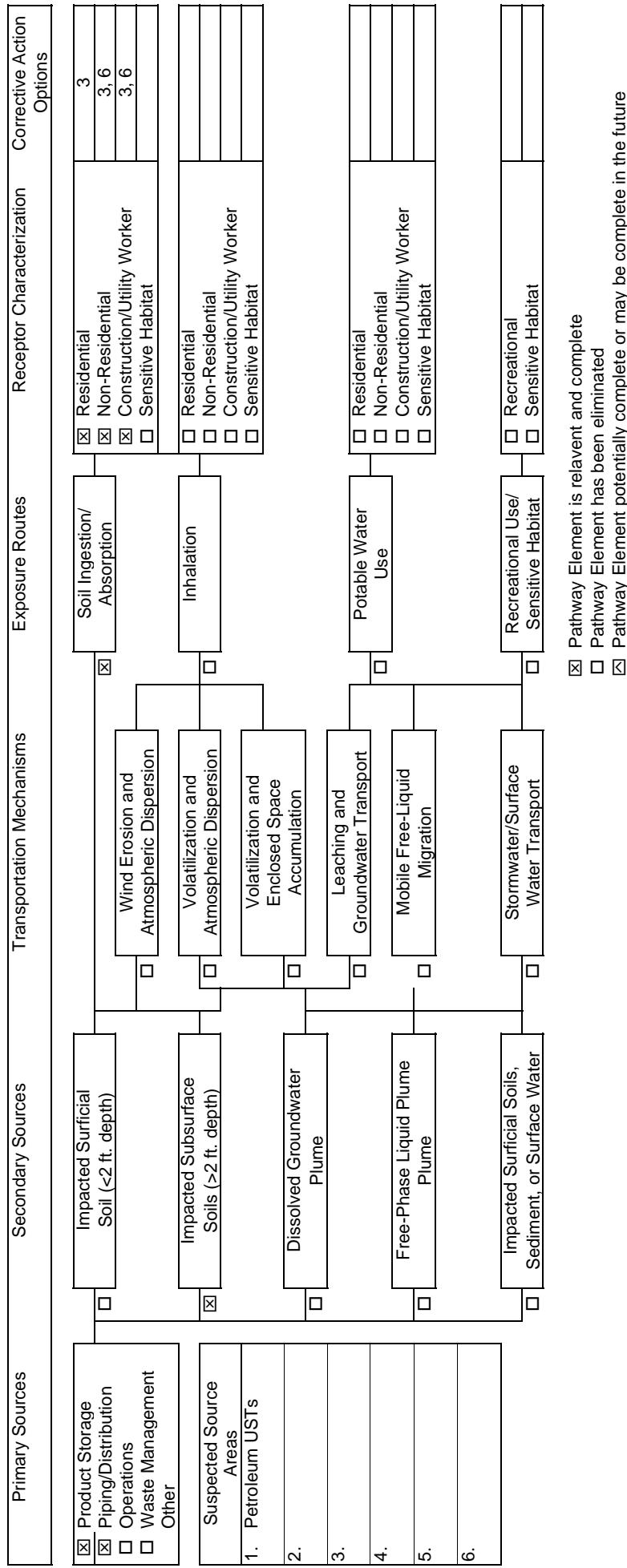
<p style="text-align: center;">Vapor Intrusion Conceptual Site Model Summary 91 Manchester Street Highland Park, Wayne County, Michigan Facility ID#: 00041299</p>	
Applicability of MDEQ Volatilization to Indoor Air Inhalation Criteria	Per the Johnson & Ettinger model and based on the lack of groundwater identified during the subsurface investigations, the building construction and the lack of free-phase LNAPL at the site, it was determined that the volatilization to indoor air inhalation (VIAI) criteria is applicable.
Evaluation of Need for Immediate Response or Assessment	Immediate response or assessment is not indicated because there are no concentrations of VOCs that exceed the available Acute Vapor Intrusion Screening Levels.
Potential Receptors	The nearest structure identified as a potential vapor intrusion (VI) receptor is the approximate 54,000 square foot building which does not include a basement. The on-site building has been unoccupied since 1971. However, given the potential redevelopment of the site, the future building occupants were considered potential receptors. The commercial and industrial properties adjoining the site were also evaluated as potential receptors.
Potential Vapor Sources	Review of data collected from multiple subsurface investigations completed at the site revealed no samples exceed the MDEQ VIAI criteria. As such, no vapor sources were identified.
Potential Migration Routes	Underground encumbrances identified during the site assessment were limited to site utilities. Given the lack of impact above the MDEQ VIAI criteria, vapor migration routes were not identified.
Evidence of Bioattenuation	Bioattenuation has not been evaluated for this pathway at this time.
Vapor Intrusion CSM Conclusions	Based on the soil data collected between 2003 and 2014, no impact has been identified to exceed the MDEQ VIAI criteria. Accordingly, vapor intrusion is not a risk at the subject property.

Note: This is a summary of the Vapor Conceptual Site Model. The complete evaluation is included in Section 3.2 of this report.

Appendix F

RBCA Flow Chart

RBCA FLOW CHART
91 Manchester Street
Highland Park, Wayne County, Michigan
Facility ID No. 00041299; Confirmed Release C-0051-03



Corrective Action Options	
1	No corrective action is proposed by AKT Peerless.
2	Delineation for soil and/or groundwater
3	Restrictive Covenant prohibits residential land use.
4	Restrictive Covenant prohibits basement and construction in V/A areas or requires engineered vapor barrier system
5	Restrictive Covenant which will require proper handling of soil in this area to eliminate potential exposure.
6	Restrictive Covenant which requires maintenance of surface cover in areas with non-residential DC exceedances
7	Monitored Natural Attenuation
8	Soil Vapor Sampling
9	LNAPL Investigation